To the Graduate Council:

I am submitting herewith a dissertation written by Laura L. Matherly entitled "A Contingency Model Exploring the Relationship of Chief Executive Entrepreneurial Traits and Situational Favorableness as Predictors and Moderators of Corporate Level Entrepreneurship." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Business Administration.

Max S. Wortman, Jr., Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Vice Provost
and Dean of The Graduate School

A CONTINGENCY MODEL EXPLORING THE RELATIONSHIP OF CHIEF EXECUTIVE ENTREPRENEURIAL TRAITS AND SITUATIONAL FAVORABLENESS AS PREDICTORS AND MODERATORS OF CORPORATE LEVEL ENTREPRENEURSHIP

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ABSTRACT

How do organizations realign their strategic direction into new product, service, and/or market areas? To understand corporate level entrepreneurship, several issues were addressed concerning the roles of: (1) the chief executive's personality; (2) organizational characteristics; and (3) the interaction of these variables. These issues were investigated in a sample of 74 chief executive officers in Tennessee. Based on the responses from a pilot study, a mail survey was used to collect the data. An altruistic appeal was made to the chief executives and a book premium was enclosed in the survey. The data collection began on April 26, 1985 and ended 7 weeks later when the response rate had reached 64 percent.

The analysis consisted mainly of comparisons of the semipartial correlation coefficients from a given regression model with simple correlation coefficients combined with hierarchical regression analysis to analyze the pattern of intercorrelations among the variables. The results showed direct, negative relationships between entrepreneurial traits (i.e., need for achievement and internal locus of control), centralization, resource support, and past corporate level entrepreneurship with the predicted variable--corporate level entrepreneurship (present). In addition, entrepreneurial focus and organization size had direct, positive relationships with corporate level entrepreneurship. The interaction between entrepreneurial traits and resource support with corporate level entrepreneurship was supported. While entrepreneurial traits had an indirect effect on the dependent variable via centralization and entrepreneurial focus, past

corporate level entrepreneurship had indirect effects via centralization, entrepreneurial focus, and organization size.

A major conclusion was that the causal paths among the variables appear to be more complex than was originally postulated. Considering variables which the organization might reorient in order to achieve a higher degree of corporate level entrepreneurship are decentralization, a high entrepreneurial focus, an adequate organization size, and a match between the chief executive's personality and resource support. The chief executive may be the most effective in impacting the entrepreneurial focus of the corporate planning group and decentralizing the responsibility for initiating strategic change. Finally, past corporate level entrepreneurship and resource support could serve as signals to potential problems created by an organization's past strategic direction.

TABLE OF CONTENTS

CHAPTER		PAGE
1.	INTRODUCTION	1
	Background	3
	Purpose	6
	Significance	8
2.	LITERATURE SEARCH	10
	Traits of Entrepreneurs	11
	Corporate Level Entrepreneurship and Organizational Structure	20
	Theoretical Model and Summary	36
3.	SOURCES AND METHODS	42
	Definitions	42
	Hypotheses	46
	Measures	55
	Pilot Test	62
	Sample	69
	Procedure	74
	Summary	83
4.	ANALYSIS AND RESULTS	87
	Data Sample	87
	Hypothesis Tests	90
	Post Hoc Hypothesis Testing	132
	Summary	149
5.	SUMMARY AND CONCLUSIONS	154
	Summary	154
	Implications	166
	Limitations	168
	Future Research	169
BIBLIOGRAPHY		171
APPENDIXES		179
APPENDIX A.	PILOT STUDY MEASURES	180
APPENDIX B.	REVISIONS OF MEASURES FOR THE MAIN STUDY	191
APPENDIX C.	POWER ANALYSIS	200
APPENDIX D.	CORRESPONDENCE	202
APPENDIX E.	SAMPLE SIC CODES	213
VITA		215

LIST OF TABLES

TABLE		PAGE
2.1.	Mean Growth Rate at High, Moderate, and Low Levels of Need for Achievement	16
2.2.	Comparison of Ansoff's Organizational Styles	24
2.3.	Characteristics and Conditions of Mintzberg's Three Modes of Strategy-Making	26
2.4.	Product-Moment Correlations of All Variables With Entrepreneurship for Three Types of Firms	29
2.5.	Correlations Between Locus of Control and Entrepreneurship and Mean Levels Across Type of Firm	34
3.1.	Descriptive Statistics of Measurement Scales in the Pilot Study: Mean Scores, Ranges, and Standard Deviations . . .	66
3.2.	Population and Sample Resulting from the Initial Computer Search for Tennessee Firms	73
4.1.	Sample and Variable Descriptive Statistics: Means, Standard Deviations, Ranges and Cronbach Alphas of Entire Sample in the Main Study of 74 Chief Executive Officers . .	88
4.2.	Product-Moment Correlations of Variables in the Study . . .	91
4.3.	Results of the Full Regression Model for Hypotheses H1A, H1B, H1C, and H1D with Corporate Level Entrepreneurship (CLE_1)	96
4.4.	Results of the Full Regression Model for Hypotheses H1A, H1B, H1C, and H1D with Corporate Level Entrepreneurship (CLE_2)	96
4.5.	Results of the Full Regression Model for Hypotheses H2A, H2B, and H2C with Corporate Level Entrepreneurship (CLE_1) .	97
4.6.	Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Hypotheses H2A, H2B, and H2C with Corporate Level Entrepreneurship (CLE_1) . .	97
4.7.	Results of the Full Regression Model for Hypotheses H2A, H2B, and, H2C with Corporate Level Entrepreneurship (CLE_2)	100

4.8. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Hypotheses H2A, H2B, and H2C with Corporate Level Entrepreneurship (CLE_2) . . . 100

4.9. Results of the Full Regression Model for Hypothesis H3 of Entrepreneurial Traits, Situational Favorableness, and the Interaction Term with Corporate Level Entrepreneurship (CLE_1) 107

4.10. Results of the Full Regression Model for Hypothesis H3 of Entrepreneurial Traits, Centralization, Resource Support, and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1) 109

4.11. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Hypothesis 3 of Entrepreneurial Traits, Centralization, Resource Support and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1) 109

4.12. Results of the Full Regression Model for Entrepreneurial Traits and Centralization with Corporate Level Entrepreneurship (CLE_1) 110

4.13. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Traits and Centralization with Corporate Level Entrepreneurship (CLE_1) 110

4.14. Results of the Full Regression Model for Entrepreneurial Traits and Resource Support with Corporate Level Entrepreneurship (CLE_1) 111

4.15. Results of the Full Regression Model for Entrepreneurial Traits and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1) 111

4.16. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Traits and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1) 112

4.17. Results of the Full Regression Model for Entrepreneurial Traits, Corporate Level Entrepreneurship (CLE_1), and the Interaction with Centralization 118

4.18. Regression Coefficients and t Tests of Entrepreneurial Traits, Corporate Level Entrepreneurship (CLE_1), and the Interaction with Centralization 118

4.19. Results of the Full Regression Model for Hypothesis H3 of the Interaction of Entrepreneurial Traits and Centralization with Corporate Level Entrepreneurship (CLE_1) 122

4.20. Regression Coefficients and t Tests of Entrepreneurial Traits, Centralization, Resource Support, Entrepreneurial Focus, and the Interaction of ETxCent with Corporate Level Entrepreneurship (CLE_1) 122

4.21. Results of the Full Regression Model for Hypothesis H3 of the Interaction of Entrepreneurial Traits and Resource Support with Corporate Level Entrepreneurship (CLE_1) . . . 123

4.22. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Traits, Centralization, Resource Support, and the Interaction of ETxRS with Corporate Level Entrepreneurship (CLE_1) 123

4.23. Results of the Full Regression Model for Hypothesis H3 of the Interaction of Entrepreneurial Traits and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1) 128

4.24. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Traits, Centralization, Resource Support, and the Interaction of ETxEF with Corporate Level Entrepreneurship (CLE_1) 128

4.25. Results of the Full Regression Model for Hypotheses H1, H2, and H3 with Corporate Level Entrepreneurship (CLE_1) 130

4.26. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for the Significant Predictors in Hypotheses H1, H2, and H3 130

4.27. Results of the Full Regression Model Including Organization Size as a Predictor of Corporate Level Entrepreneurship (CLE_1) 133

4.28. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Organization Size as a Predictor of Corporate Level Entrepreneurship (CLE_1) 133

4.29. Results of the Full Regression Model Including Past Corporate Level Entrepreneurship (CLE_2) as a Predictor of Present Corporate Level Entrepreneurship (CLE_1) 135

4.30. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Past Corporate Level Entrepreneurship (CLE_2) as a Predictor of Present Corporate Level Entrepreneurship (CLE_1) 135

4.31. Results of the Full Regression Model for Entrepreneurial Focus and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1) 136

4.32. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Focus and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1) 136

4.33. Results of the Full Regression Model for Centralization and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1) 138

4.34. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Centralization and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1) 138

4.35. Results of the Full Regression Model Including Organization Size and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1) 139

4.36. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Organization Size and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1) 139

4.37. Results of the Full Regression Model Including Need for Achievement with Corporate Level Entrepreneurship (CLE_1) . 142

4.38. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Need for Achievement with Corporate Level Entrepreneurship (CLE_1) . 142

4.39. Results of the Full Regression Model Including Locus of Control with Corporate Level Entrepreneurship (CLE_1) . . . 143

4.40. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Locus of Control with Corporate Level Entrepreneurship (CLE_1) 143

4.41. Results of the Full Regression Model Including Initiation with Corporate Level Entrepreneurship (CLE_1) 145

4.42. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Initiation with Corporate Level Entrepreneurship (CLE_1) 145

4.43. Results of the Full Regression Model Including Approval with Corporate Level Entrepreneurship (CLE_1) 146

4.44. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Approval with Corporate Level Entrepreneurship (CLE_1) 146

4.45. Results of the Full Regression Model Including a Three-Way Interaction with Corporate Level Entrepreneurship (CLE_1) . 148

4.46. Regression Coefficients and t Tests Including a Three-Way Interaction with Corporate Level Entrepreneurship (CLE_1) . 148

LIST OF FIGURES

FIGURE		PAGE
2.1.	Theoretical Model of Major Variables	38
2.2.	Specific Independent Variables Hypothesized to Effect Corporate Level Entrepreneurship	39
4.1.	Venn Diagram of Corporate Level Entrepreneurship, Entrepreneurial Traits, and Entrepreneurial Focus	114
4.2.	Model of Entrepreneurial Traits, Entrepreneurial Focus, and Corporate Level Entrepreneurship	116
4.3.	Model of Entrepreneurial Traits, Centralization, and Corporate Level Entrepreneurship	119
4.4.	Interaction of Resource Support and Entrepreneurial Traits with Corporate Level Entrepreneurship: Cell, Row, and Column Means with Number of Observations	124
4.5.	Example of Residuals Versus Predicted Values in Table 4.36 .	150
4.6.	Major Variables and Interrelationships with Corporate Level Entrepreneurship	151

CHAPTER 1

INTRODUCTION

Understanding how organizations respond strategically is a complex and challenging problem. Organizations today face increasing environmental turbulence and complexity--trends which reflect the need for renewal and change. The adage "it worked before" is no longer sufficient for maintaining status quo. In 1979, Ansoff documented the historical evolution and emerging trends in the firm's external environment and concluded that not only is the complexity of the environment increasing, due to the emergence of new environmental sectors, but that the rate of environmental change has accelerated to the point that "conventional" strategy formulation has been unprepared to respond. Defined as strategic change which realigns the firm into a new product, service, and/or market fit, corporate level entrepreneurship is the solution to the changing environment (Ansoff, 1979).

The study of a firm's strategic response is further complicated by the multiplicity of influences and interrelationships among variables which dictate the necessity of a broad research scope. To this end, the trends toward the use of multivariate analysis and causal models may lead to a better understanding of the relationships among variables and, consequently, stronger theoretical models (Miller and Friesen, 1977). Similarly, because a firm's strategic response is the result of a number of factors, the need for cross-fertilization between disciplines that can utilize a broader knowledge base is important. For example, Jemison

(1981) argued that the potential for integrating other disciplines, e.g., administrative behavior, with strategic management research is enormous and even necessary for continued progress in theory development and applied research.

This complex reality that theorists try to model and empiricists seek to measure is even more relevant in the study of corporate level entrepreneurship. On the one hand, in order to understand and predict corporate level entrepreneurship, the role of chief executive officer's personality in strategy formulation must be determined, for the chief executive is typically responsible for: (1) carrying out the mission of the firm; (2) success or failure of the organization; and (3) devising viable solutions to emerging internal and external environmental trends (Hodgetts and Wortman, 1980). On the other hand, organizational theorists have focused on the interrelationship between organizational structure and strategy (e.g., Galbraith and Nathanson, 1979). Thus, the context or organizational characteristics within which the chief executive operates, could also support or constrain the degree of corporate level entrepreneurship. Therefore, integrating the literature which deals with the entrepreneurial personality and the literature on organizational characteristics associated with corporate level entrepreneurship can provide valuable insights about corporate level entrepreneurship. Further, analysis of the interrelationships between critical variables in these fields using a multivariate approach as well as a causal model may be the most realistic way to increase understanding about corporate level entrepreneurship both theoretically and empirically.

This chapter includes brief sections on entrepreneurial traits and corporate level entrepreneurship, the purpose of the study, and the significance of the study to academicians and practitioners.

Background

Historically, entrepreneurial traits have been studied extensively as a small business phenomenon. High need for achievement (n Ach) and internal locus of control are the two major traits which most consistently show a positive relationship to entrepreneurship across a range of different sample groups. McClelland (1962) described the high n Ach personality as one who is motivated to achieve and for a given task prefers personal responsibility, moderate goals, and concrete performance feedback. Rotter (1966) described the high internal locus of control personality trait as descriptive of one who believes that personal behavior-reward outcomes are contingent upon one's own behavior or attributes (and not by forces independent of oneself). Locus of control is the only one of these traits that has been examined as an important predictor of corporate level entrepreneurship (e.g., Miller, 1983). Furthermore, there is some evidence that suggests a curvilinear relationship between these traits and entrepreneurship (Miller, 1983; Wainer and Rubin, 1969).

Corporate level entrepreneurship encompasses strategy formulation which broadens the scope of a firm's activity to new product, market, and/or business operations in an innovative and proactive way. Since the research on corporate level entrepreneurship is relatively new, the literature is primarily conceptual and empirical studies on the topic

are comparatively recent. The main focus of this research is on organizational characteristics which support or constrain entrepreneurial activity in a firm.

Westfall (1969) focused on the economic impact of new venture proposals, company familiarity with the new venture propsal, and the planning horizon as important determinants of corporate level entrepreneurship. Quinn (1979) also suggested that the time horizon was important as well as incentives, e.g., reward systems of the organization. In addition, Lawler and Drexler (1981) elaborated on the critical role that reward systems may play in encouraging corporate level entrepreneurship.

Some researchers have examined corporate level entrepreneurship by developing organizational typologies--with one organizational type being the entrepreneurial organization--and then proceeded to discuss relevant characteristics associated with each type. Ansoff (1972) characterized the entrepreneurial mode by highlighting the decision processes which occur in formulating the strategic direction of an organization, e.g., whether the organization seeks change, anticipates threats and opportunities, and generates multiple solutions. Similarly, Mintzberg (1973) discussed differences of types of firms in their "strategy making" process with the entrepreneurial mode being distinguished by such characteristics as actively searching for new opportunities, a centralized power structure, and growth objectives. In an even broader view of entrepreneurship, Miles, Snow, Meyer, and Coleman (1978) characterized the entrepreneurial problem for each of three main types

of firms with the "Prospector" organization being the most entreprenuerial of the three types.

A stream of empirical research on corporate level entrepreneurship began with Miller and Friesen's (1977; 1978) development of ten organizational archetypes. One of these archetypes was an entrepreneurial mode which was characterized by centralized power, innovative product market strategies, and a proactive, long-term orientation (Miller, 1979). That past strategies create a momentum to continue in the same direction for conservative and entrepreneurial firms was supported by Miller and Friesen (1980; 1982). Miller, Kets de Vries, and Toulouse (1982) found positive correlations between top executive locus of control and strategy innovation, risk-taking, proactiveness, and futurity. Similarly, Miller (1983) found predicted differences across types of firms between entrepreneurship and top executive locus of control, as well as environmental, organizational, and decision making dimensions.

Based on the preceding brief review of conceptual and empirical research, three common organizational characteristics have emerged which describe the entrepreneurial firm. These characteristics, which together determine the situational favorableness for the expression of corporate level entrepreneurship, are: (1) centralization of strategy formulation; (2) appropriate resource support; and (3) an entrepreneurial focus in analyzing alternative courses of action.

The relationship between entrepreneurial traits and corporate level entrepreneurship may also depend on whether the situation is structured so as to support or constrain corporate level

entrepreneurship, i.e., the degree of situational favorableness. McClelland (1962) and Rotter (1966) argued that the tendency for the personality traits, n Ach and locus of control, respectively, to be expressed in performance outcomes is limited or encouraged by the situation. Moreover, an examination of Miller's (1983) data indicated the possibility of a situation by trait interaction. The correlation between locus of control of the top executive and entrepreneurship varied considerably across the three types of firms--and the firm typology was derived from situational variables, e.g., level of centralization.

One final organizational characteristic is important in the study of corporate level entrepreneurship. Burgelman (1983) argued that corporate entrepreneurship in large, complex organizations occurs at lower management levels because top management lacks the understanding necessary to engage in entrepreneurial activity. In fact, Miller (1983) found the strongest relationship between top executive locus of control and corporate entrepreneurship when organizations were highly centralized. This sample group also included small organizations. Therefore, organizational size may affect corporate level entrepreneurship two ways--directly and indirectly via its effect on centralization.

Purpose

The purpose of this study was to develop and test a contingency model which will predict the degree of corporate level entrepreneurship. In order to develop the model, the following questions were addressed:

1. What are the major characteristics which describe the chief executives' entrepreneurial personality? How do these individual differences or traits combine into a single index that optimizes the degree of corporate level entrepreneurship? Specifically, is the true response function best estimated by a linear combination of a first-order regression model and/or a second-order, polynomial regression model?
2. What organizational characteristics foster development and expression of entrepreneurship in business firms? How do these situational variables combine into a single index that optimizes the relationship between situational favorableness and corporate level entrepreneurship? Similarly, is the true response function best estimated by a linear combination of a first-order regression model?
3. Is the relationship between corporate level entrepreneurship and the chief executives' entrepreneurial traits contingent upon whether the situation is structured so as to promote corporate level entrepreneurship? In other words, if the situation is structured to encourage corporate level entrepreneurship, will there be an even stronger relationship between chief executive entrepreneurial traits and corporate level entrepreneurship? Therefore, is the true response function best described by a regression model which includes main effects for entrepreneurial traits and situational favorableness, as well as the interaction of the two?

4. How does organization size, directly or indirectly via centralization, affect corporate level entrepreneurship? Is the relationship among these variables, then, best described by a causal path analysis?

Significance

To students and academicians, this study is significant because it integrates two different fields of research into a comprehensive analysis and provides the opportunity to explore how chief executive entrepreneurial traits and situational variables interact in a strategic management context. Theoretically, this study builds upon and goes beyond previous work to suggest a more complex, multivariate explanation of how factors interact and affect corporate level entrepreneurship. Further, this unifying, theoretical framework will be tested empirically in order to illustrate the nature of the relationships among hypothesized variables and linkages. Finally, this study is important because it focuses on the causal path between organizational size and corporate level entrepreneurship in an attempt to clarify the potential direct and indirect effects of organizational size on corporate level entrepreneurship.

Practitioners have long had an interest in entrepreneurship. Many new challenges and problems exist today that span a broad spectrum, e.g., in energy, productivity, and environmental improvement, and these problems will require innovative solutions (Quinn, 1979). With increasing environmental change and decreasing product market life spans, organizational survival is threatened, and an entrepreneurial

response is necessary in order to reposition an organization successfully in its environment (Ansoff, 1972). This study then is significant for those organizations who are now or will need to orient their strategic management process toward renewal and growth into other products, markets, and/or services.

Insight into how chief executives' traits and situational variables may impact a strategic response which will enable practitioners to better understand how to match the right executive with the right situation. Based on the most appropriate combination of traits, chief executive officer trait assessment and selection can be used to match the entrepreneurial personality to the appropriate situation and strategy. Achieving an appropriate fit can enable chief executives to formulate successful strategies as well as result in more effective implementation of a firm's strategy (Gupta and Govindarajan, 1984). Conversely, designing the situation to fit the chief executive's personality may be a viable alternative. In other words, the situation can be designed to be more compatible with the chief executive officer's personality and the strategic direction of the firm. Appropriate design of the situation may also have a significant influence in retaining and capitalizing on the skills and talents of "would be" entrepreneurs within an organization (Roberts, 1968).

CHAPTER 2

LITERATURE SEARCH

The determinants of entrepreneurship can and should be studied in business corporations. Traditionally, entrepreneurship has been viewed as a small business phenonmenon, with a focus toward identifying the entrepreneurial prototype or characteristics which describe the entrepreneurial personality. A wide diversity in definitions prompted some researchers to posit different entrepreneurial "types" (Cooper and Dunkelberg, 1981; Dunkelberg and Cooper, 1982; Moore, 1970; Webster, 1976, 1977) and still others to abandon the search for entrepreneurial traits and postulate contingency factors which potentially could play a role in entrepreneurial development (DeCarlo and Lyons, 1980; Liles, 1974; Powell and Bimmerle, 1980; Shapero, 1975). More recently, the concept has been broadened to encompass the study of corporate entrepreneurship, which focuses on organizational, environmental and strategic characteristics which might foster or impede entrepreneurial activity in the total organization.

Due to the comprehensive scope of the literature on entrepreneurship, two major research streams of characteristics associated with entrepreneurial activity are reviewed:

1. Traits of entrepreneurs, and

2. Corporate level entrepreneurship and organizational structure.

Within each stream of research, the scope of the literature review will encompass major theoretical developments and empirical support where it

is available. Based upon this review, a theoretical model has been formulated.

Traits of Entrepreneurs

Entrepreneurs have been described as "not remarkably likeable people . . . who have failed in the traditional and highly structured roles available to them in society," (Collins, Moore, and Unwalla, 1974, p. 241) as well as someone "who organizes, manages, and assumes risks for change" (Springborn, 1974, p. 274). While the personality characteristics which identify potential entrepreneurs are varied, the lack of consistency in the literature with respect to these traits can be attributed partly to lack of empirical research and partly to wide variations in the samples or definitions of entrepreneurial groups, e.g., some researchers consider top managers as entrepreneurs while others do not.

The traits suggested by previous empirical research which describe entrepreneurs are: (1) high need for achievement (DeCarlo and Lyons, 1979; Hornaday and Aboud, 1971; Hornaday and Bunker, 1970; Lachman, 1980; McCelland, 1961, 1965a; Meyer, Walker, and Litwin, 1961; Pandey and Tewary, 1979; Singh, 1978; Smith and Miner, 1984; Wainer and Rubin, 1969); (2) internal locus of control (Adrisani and Nestel, 1976; Anderson, 1977; Brockhaus, 1975, 1982; Hornaday, 1971; Miller, 1983; Miller, Kets de Vries, and Toulouse, 1982; Pandey and Tewary, 1979; Shapero, 1975); (3) high need for independence and effective leadership (DeCarlo and Lyons, 1979; Hornaday and Aboud, 1971); (4) high need for autonomy (DeCarlo and Lyons, 1979; Hornaday and Bunker, 1970; Sexton and

Bowman, 1983, 1984); (5) information processing capability (McGaffey and Christy, 1975); (6) preference for intermediate level risks (Meyer, et al., 1961); (7) moderate need for power (Wainer and Rubin, 1969); (8) low conformity (DeCarlo and Lyons, 1979; Sexton and Bowman, 1983, 1984); (9) agression, support, and benevolence (DeCarlo and Lyons, 1979); (10) energy level, risk-taking, and change (Sexton and Bowman, 1983, 1984); (11) dominance, endurance, innovation, self-esteem, low anxiety level, and low cognitive structure (Sexton and Bowman, 1983); and (12) low interpersonal affect, social adroitness, low harm avoidance, and low succorance (Sexton and Bowman, 1984).

Hull, et al., (1980) indicated no significant effects for internal locus of control and entrepreneurship and mixed effects for need for achievement, interest in money and fame, social desirability, task preferences, risk propensity, and creativity with entrepreneurship. In addition, the relationship between need for achievement and entrepreneurship was not supported by Sexton and Bowman (1983). Finally, other traits which were not supported by the empirical research were high need for power (Meyer, et al., 1961), need for affiliation (Lachman, 1980; Meyer, et al., 1961; Wainer and Rubin, 1969), and risk-taking propensity (Brockhaus, 1980).

High need for achievement and internal locus of control were the two major traits which most consistently show a positive relationship to entrepreneurship across a range of different sample groups. McClelland (1962) described three characteristics of the high need for achievement personality. The achiever preferred: (1) personal responsibility for

finding problem solutions; (2) moderate achievement goals; and (3) concrete feedback concerning performance.

In view of the above, Atkinson (1957, 1964, 1966) elaborated on the achievement motive and incorporated the motivation to approach success with the motivation to avoid failure. First, the strength of the motivation to approach success was defined as a multiplicative sum of the motive to achieve (M_s), the subjective probability of success/expectancy (P_s), and the incentive value of success ($I_s = 1 - P_s$): Approach = $M_s \times P_s \times I_s$. Second, the strength of the motivation to avoid failure was defined as a multiplicative sum of the motive to avoid failure (M_{af}), the subjective probability of failure (P_f), and the incentive value of failure (I_f, where $P_s + P_f = 1.0$): Avoidance = $M_{af} \times P_f \times I_f$. The achievement motive is stronger when $M_s > M_{af}$, and the motive to avoid failure is stronger when $M_{af} > M_s$. Therefore, the motivation to avoid failure always inhibits the motivation or disposition to achieve success.

For both the motive to approach success and the motive to avoid failure, motivation is strongest when $P_s = .5$. At values above or below .5, the motivation strength decreases. Thus, achievement motivation is predicted to be a curvilinear function of the difficulty of the task and motivation will be strongest for tasks of intermediate difficulty. Further, Atkinson (1957) presented evidence that subjects having a high need for achievement score reported a preference for intermediate risk (probabilities) vs. extreme risk in a hypothetical gambling situation, as compared to subjects who score low on need for achievement motivation.

In 1966, Atkinson also discussed the effects of success and failure on subsequent motivation (e.g., success should increase P_s and increases beyond $P_s = .5$ should diminish motivation) and added Feather's (1961) concept of extrinsic motivation to the model. Extrinsic motivation (T_{ext}) referred to other motives and incentives that were not related to intrinsic achievement-oriented motives. Thus, the total strength of the tendency (T_r) to perform a task was the result of achievement-related motivation and extrinsic motivation and the full model became: $T_r = M_s(1 - P_s)P_s + M_{af}(-P_s)(1 - P_s) + T_{ext}$. Subsequent modifications to this fundamental statement of the theory of achievement motivation were reviewed by Revelle and Michaels (1976).

Why an individual who is high on need for achievement is also more likely to become an entrepreneur or business executive was described by McCelland (1962). In general, the characteristics of the high need for achievement individual are similar to those describing the entrepreneur, and the interrelationship is best explained by reference to the original measure of achievement motivation. Traditionally, need for achievement has been measured by an adaptation of Murray's (1938) Thematic Apperception Test (TAT). The procedure was described in detail by McClelland, Atkinson, Clark, and Lowell (1953) and used pictures about which subjects wrote a story. Questions were answered such as "What is happening," and "What is being thought?" The stories were scored for achievement imagery on the basis of the frequency of reference to particular achievement-related categories. The person who scored high on the test indicated a concern for achievement.

McCelland (1962) argued that people who spend their time thinking about achieving, particularly in reference to a performance standard, were actually more likely to achieve and get ahead in real life, i.e., thinking and the motivation to achieve leads to doing and behavior/performance outcomes. Moreover, McClelland (1962) found that executives scored much higher on the average achievement motivation than individuals with comparable education and backgrounds in other professions and occupations. According to McClelland (1962), the characteristics of the achiever fit well with the demands of the entrepreneurial and executive job. These situations provide more opportunities for the achiever to use his/her talents and are the type of situation that the achiever would prefer.

In 1969, Wainer and Rubin examined the relationship between need for achievement and company performance of technical entrepreneurs. Need for achievement was measured by McClelland's (1961) TAT. The Kendall Tau correlation between need for achievement and company performance was $T=.15$; $p<.08$. Dividing the sample ($n=51$) into three groups, the high need for achievement group exhibited the highest mean growth rate; the moderate need for achievement group showed the lowest mean growth rate; and the low need for achievement group exhibited a slightly higher mean growth rate than the moderate group, but was still substantially lower than the high need for achievement group (see Table 2.1). In other words, the difference between the mean growth rate of the high need for achievement group and the moderate or low need for achievement group was substantially greater than the difference between the moderate and low groups suggesting the possibility of a curvilinear

Table 2.1. Mean Growth Rate at High, Moderate, and Low Levels of Need for Achievement.

Need for Achievement	Mean Growth Rate
High (≥ 9) n=14	.73
Moderate ($4 \geq x \leq 8$) n=19	.21
Low (≤ 3) n=18[a]	.36

[a]Results of Mann-Whitney U tests: high versus moderate, $p<.0001$; high versus low, $p<.006$; and moderate versus low, $p<.08$.

Source: Wainer, H. A., and Rubin, I. M. Motivation of research and development entrepreneurs: Determinants of company success. Journal of Applied Psychology, 1969, 53, 178-184.

relationship. Thus, studies using need for achievement as an independent variable in regression analysis should explore the predictability of a second order polynomial to fit a curvilinear response function.

Internal locus of control was defined and measured by Rotter (1966) as a personality variable which deals with an individual's belief and general expectations about behavior-reward outcomes. Stable differences were posited to exist among individuals in the extent to which they perceive reinforcements as: (1) contingent upon their own behavior and/or personal characteristics; or (2) controlled by forces and events which are independent of one's actions. Locus of control deals with the perception of the causal relationship between one's behavior and rewards which follow that behavior. When a person believes that reinforcements are under the control of powerful others, or result from luck or chance, that individual is considered to have an external locus of control. Conversely, when one believes that rewards are contingent upon one's own behavior or attributes, that individual believes in an internal locus of control.

Rotter (1966) presented evidence to support the hypothesis that if an individual believes that reinforcements are contingent upon behavior, and positive reinforcements occur, then the expectancy that outcomes are dependent on behavior is strengthened. The potential that the behavior will occur in the same or similar situations is also strengthened (or weakened in the case of a negative reinforcement). For the individual who has an external locus of control, however, the effect of a reinforcement on one's expectancy that certain outcomes follow

particular behaviors will not be as great. Similarly, the potential for that behavior to recur is less likely in the case of positive reinforcements; and with negative reinforcements, the potential for that behavior to recur is less likely to be weakened.

The rationale for a predicted positive relationship between internal locus of control and entrepreneurship is similar to the theoretical linkage between need for achievement and entrepreneurship. As described by Brockhaus (1975), since the entrepreneurial role is one that implies individual responsibility for actions and outcomes, then the entrepreneur would believe that the outcomes (success or failure) of an entrepreneurial venture are contingent upon his/her ability and effort. A person who believes that the success or failure of a relatively risky venture is not under his/her control--but controlled by luck, chance, or powerful others--would not be as likely to engage in entrepreneurial behavior. In short, the psychological characteristics of high internal locus of control individuals--they believe that they control their own destiny and thus are more self-reliant and independent--closely parallel those of the entrepreneur (Pandey and Tewary, 1979; Shapero, 1975).

Several conclusions can be drawn from the preceding review of the literature on need for achievement and locus of control. The interrelationship and joint impact of achievement motivation and locus of control on entrepreneurial behavior has not been thoroughly investigated in studies of entrepreneurship. Furthermore, there is some evidence to suggest that there may be a positive relationship between internal locus of control and high need for achievement (Rotter, 1966);

but the nature of this interrelationship is complex and probably depends on a number of other factors such as attribution processes and concepts (Weiner, 1974; Weiner and Kukla, 1970). The evidence from the empirical research on entrepreneurship is not clear as to whether:

1. Both traits contribute independently and uniquely to entrepreneurial behavior, i.e., the traits are not interrelated or intercorrelated; or
2. The influence of each trait is equal in its effect on entrepreneurship, i.e., one trait is not a more powerful predictor of entrepreneurship than the other.

Distinctions between entrepreneurs (e.g., someone who starts and develops a new business) and managers, based on the preceding characteristics, have been criticized as an imprecise criterion on which to differentiate the two groups (Hartmann, 1959). For example, Brockhaus (1980), provided empirical support for the notion that entrepreneurs do not differ in the trait, risk taking propensity, from managers who have recently assumed new managerial positions, and McClelland (1965) included managers in his work with entrepreneurs.

Managers then can also exhibit innovative behaviors, and it is the premise of this study that distinctions between entrepreneurs and nonentrepreneurs, based on whether one starts a new business, is an artificial distinction. To advance understanding about the entrepreneur and entrepreneurship, research needs to be directed toward the traits and behaviors underlying each, respectively.

Corporate Level Entrepreneurship and Organizational Structure

The term "corporate entrepreneurship" is defined in a variety of ways by different researchers. Tying corporate entrepreneurship to a particular level of management or division (e.g., new venture development and research and development) in the organizational structure or relating the concept to a type of organization (e.g., high technology firms) appears to be the basis for this diversity. This section discusses each author's conceptualization of corporate entrepreneurship and describes situational variables which might potentially stimulate entrepreneurship at the corporate strategy level--although they are not specific to a particular organizational division, subset, or type. Although most of the studies include information that is relevant to different management levels, this discussion will be restricted primarily to those dimensions which directly apply to the entrepreneurial activity of the strategic management chief executive officer and/or group. The purpose of this discussion is to identify the major situational dimensions which are hypothesized to affect entrepreneurial activity in the strategic decision making context.

This section is divided into three subdivisions: (1) a general overview from authors whose focus is to discuss how to stimulate entrepreneurship in organizations; (2) an overview by organizational typologies which group together those researchers who see the entrepreneurial firm as one of two or more types of firms; and (3) the pioneering empirical research of Miller (1979, 1983), Miller and Friesen

(1977, 1978, 1980, 1982), and Miller, Kets de Vries, and Toulouse (1982).

General Overview

Westfall defined corporate entrepreneurship as "inducing entire corporations to establish new, need-satisfying business enterprises" (1960, p. 235). In this study, he compared top executive officers who were favorably and unfavorably disposed to a hypothetical new venture proposal. Three factors were identified as important determiners of company interest in the new venture proposal. First, company size was important--the larger the organization, the less interested the executive officer was in the proposal. The expected annual return of the venture was $100,000; thus, for larger firms, the venture would have a minimum economic impact on the total organization. Second, company familiarity with the business concept, i.e., a franchising program, positively influenced interest. Third, the longer the planning horizon, the more interested the company was in the venture.

Conversely, factors which tended to discourage interest in the new venture included a scarcity of management resources, e.g., executive time and commitment (typical in the small firms), and a high perceived cost of innovation. Moreover, the most important factor was unbalanced information concerning familiarity with the proposal--there was a positive relationship between familiarity with the organization's current line of activity and executive interest. Therefore, acceptance of new alternatives was more likely if the alternative was compatible and similar to the firm's present area of specialization. One of

Westfall's (1969) conclusions to overcome these barriers and thus stimulate corporate entrepreneurship was to pursue a strategy of creating "subsidies" for entrepreneurial action--in terms of cash, information, and management personnel.

Quinn defined innovation as "creating and introducing original solutions for new or already identified needs" (1979, p. 19). In an investigation of successful, large-scale innovations, primarily of a technological nature, Quinn (1979) suggested several factors that were descriptive of an innovative strategic decision making environment. A strong incentive for successful innovation characterized these organizations, i.e., large dollar investments were at risk, but the payoff, if successful, would enable the organization to achieve a powerful competitive position. In addition, long time horizons (e.g., even decades) as well as top-level risk-taking support and encouragement to organizational groups proposing "champion" developments were also major factors which distinguished successful innovations.

Concerning organizational strategies which were equipped to respond to these large-scale innovations, Quinn (1979) first identified the planning process as being oriented toward "opportunity seeking" of quality ideas, and not "resource rationing" which is typical of many capital planning/budgetary processes. In portfolio planning, criteria such as Return on Investment and Present Value were inappropriate to criteria which define the general thrust of long term, developmental, and growth activities. Major objectives then should concern innovation and the direction of the innovation as well as control and reward systems relevant to these objectives.

Lawler and Dexler (1981) discussed three changes that may create a climate conducive to corporate entrepreneurship, which were based on a combination of interview and questionnaire responses of six, large multinational corporations. First, a tolerance for failure of some ventures is necessary; and second, success for entrepreneurial achievements should be rewarded in proportion to the success of the innovation. Third, spending authority and special funds for entrepreneurial activities is important to the creation of a corporate entrepreneurial climate.

Overview by Organizational Typologies

According to Ansoff (1972), an entrepreneurial mode of organization behavior is at the core of the strategic management process. Organizations which exhibit this style of behavior, as compared to incremental styles associated with operations management, differ in their managerial and organizational cultures. These characteristics are summarized in Table 2.2. The fundamental, distinguishing attribute of the entrepreneurial organization was that it seeks change rather than resists change. In addition, the entrepreneurial mode was also one that anticipates threats and opportunities; searches for global alternative courses of action; generates multiple solutions; and evaluates alternatives based on a criterion of optimization.

Mintzberg (1973) presented three distinct modes of "strategy making" which are characteristic of three different types of firms--the entrepreneurial mode, the adaptive mode, and the planning mode (see

Table 2.2. Comparison of Ansoff's Organizational Styles.

Attribute/Mode	Incremental	Entrepreneurial
Intent	To preserve status quo	To induce change
Value system (objectives)	Usually not explicit Stable or smooth extrapolation of past performance	Usually explicit Determined through interaction of opportunities and organizational capabilities
Reward and penalty system	Rewards for stability, efficiency Penalties for deviance	Rewards for creativity and initiative Penalties for lack of change generating initiative
Risk attitude	Conservative minimize risk	Risk propensive Balance of risk vs. gain Maintain a risk portfolio
Leadership style	Based on popularity and consensus	Based on charisma Skill to inspire people to accept change
Organizational structure	Stable Activities grouped according to common skills and capabilities Search for economies of scale Activities loosely coupled Reliance on routine	Fluid Activities grouped according to problems Premium on responsiveness to change Activities closely coupled
Management problem-solving		
Recognition of action need	Reactive in response to problems Time lagged behind occurrence of problems	Active search for opportunities Anticipatory
Search for alternatives	Reliance on past experience Preference for minimal departures from status quo Single alternative generated at a time	Creative search Wide ranging from status quo Multiple alternative generated
Evaluation of alternatives	Satisficing-first satisfactory solution accepted Also see "risk attitude" above	Optimizing-best of a set of alternatives is selected

Source: Ansoff, H. I. The Concept of Strategic Management. Journal of Business Policy, 1972, 2, 2-7.

Table 2.3). Each was differentiated by characteristics dealing with the "strategy making" process and the conditions which drive an organization to use a particular mode. The major characteristics of the entrepreneurial mode are as follows:

1. Active search for new opportunities is primary and problem solving is secondary.
2. Power to commit the organization to bold, new directions and courses of action is centralized with the chief executive.
3. Decisions are characterized by "dramatic leaps forward" where the organization stands to reap substantial gains under conditions of uncertainty.
4. Dominant objective of the organization is growth.

Thus, the entrepreneurial mode is one where decisions are proactive, based on judgment, and are flexible and loosely coupled. The strategic direction is general--not specific--and the entrepreneurial mode is more characteristic of young, small organizations rather than established and/or large organizations.

According to Miles, Snow, Meyer, and Coleman (1978), entrepreneurship may occur in all types of organizations, but the nature of the entrepreneurial problem varies across organizational types. For Defenders, the entrepreneurial problem is one of how to create stability in the total market domain. For Prospectors and Analyzers, the entrepreneurial problem is one of locating and developing new product and market opportunities. In addition, Analyzers must also deal with the problem of maintaining viability in their present product-customer base. The Analyzer is then described as a viable alternative to either

Table 2.3. Characteristics and Conditions of Mintzberg's Three Modes of Strategy-Making.

Attribute	Entrepre-neurial Mode	Adaptive Mode	Planning Mode
Characteristic			
Motive for decisions	Proactive	Reactive	Proactive and reactive
Goals of organization	Growth	Indeterminate	Efficiency and growth
Evaluation of proposals	Judgemental	Judgemental	Analytical
Choices made by	Entrepreneur	Bargaining	Management
Decision horizon	Long term	Short term	Long term
Preferred environment	Uncertainty	Certainty	Risk
Decision linkages	Loosely coupled	Disjointed	Integrated
Flexibility of mode	Flexible	Adaptive	Constrained
Size of moves	Bold decisions	Incremental steps	Global strategies
Vision of direction	General	None	Specific
Condition for use			
Source of power	Entrepreneur	Divided	Management
Objectives of organization	Operational	Non-operational	Operational
Organizational environment	Yielding	Complex, dynamic	Predictable stable
Status of organization	Young, small or strong leadership	Established	Large

Source: Mintzberg, H. Strategy-making in three modes. California Management Review, 1973, 16, 44-53.

the Prospector or Defender, because it combines characteristics of each and recognizes the importance of maintaining stability in the organization's present domain as well as extending that domain to new products, services, or markets. For all three types of organizations, evidence of management acceptance of a new product-market domain is marked by the commitment of resources to that domain. A fourth type of organization is also described--the Reactor--which describes those organizations that respond inappropriately to environmental conditions.

Empirical Research

Miller and Friesen (1977, 1978) developed ten organizational archetypes using Q-type factor analysis which described homogeneous groups of firms. Based on the score pattern on characteristics concerning environment, structure, strategy making, and success dimensions, a profile of each type was developed. In 1979, Miller then developed four common archetypes in detail. The entrepreneurial mode was characterized by more centralized power, as well as delegation of operating authority, sophisticated intelligence systems, and a higher number of technocrats. Product market strategies were more innovative, conscious, and covered a broad range of factors. In addition, the orientation of the firm was proactive, long term, and adaptive to the environment.

In a subsequent study, Miller and Friesen (1982) also investigated the relationship between environmental, information processing, structural, and decision making variables with conservative and entrepreneurial firms. Based on the hypothesis that past practices,

trends, and strategies in an organization create a momentum to continue in the same direction (Miller and Friesen, 1980), they predicted that the correlates of innovation would vary depending on whether the organization was classified as conservative or entrepreneurial. The relationship between environment, information processing, structure, and decision making variables to entrepreneurship (measured by level of innovation and risk taking) varied depending on the level of entrepreneurship. Using a curvilinear regression analysis, they also found that innovation had a curvilinear relationship to environmental scanning, controls, futurity of strategy, and consciousness of strategy, i.e., that at high levels of innovation, there was a negative relationship with each of the dependent variables.

Miller, et al. (1982) found a positive correlation between top executive locus of control and strategy innovation, risk-taking, proactiveness, and futurity. In a similar field study, Miller (1983) investigated the relationship between entrepreneurship and types of firms. Using a typology similar to Mintzberg's (1973), four categories of independent variables--locus of control of the top executive, environment, organization/structure, and decision making/strategy--were used to predict levels of entrepreneurship (see Table 2.4). Entrepreneurship was defined as actions which concern product, market, and technological innovation, proactiveness, and risk taking. The independent variables which had significant ($p \leq .10$) correlations with entrepreneurship were locus of control of the executive; environmental dynamism, heterogeneity, and hostility; scanning, technocratization, differentiation; and the analysis, futurity, explicitness of the

Table 2.4. Product-Moment Correlations of All Variables With Entrepreneurship for Three Types of Firms.

Variables	Simple Firms	Planning Firms	Organic Firms	All Types
Locus of control of leader	-.66***	-.43**	-.16	-.64***
Environment				
Dynamism	.09	-.06	.52**	.35***
Heterogeneity	.18	.22	.44*	.41***
Hostility	.24	.12	.50**	.26**
Organization/structure				
Scanning	.41**	.21	-.01	.26**
Controls	.12	.13	-.11	.11
Communication	-.09	.27	.38*	.08
Resources	-.10	-.11	-.18	-.07
Centralization	.40**	-.06	-.60**	-.01
Technocratization	.51**	.36*	.53**	.46***
Differentiation	.19	.34*	.10	.46***
Integration	.31*	-.11	.00	.10
Decision making/strategy				
Analysis	-.10	.20	.42*	.19*
Futurity	.15	.10	.37*	.25**
Explicitness of strategy	.24	.69***	.43*	.39***
Strategic integration	.02	.33*	-.31	-.09
Entrepreneurship				
Innovation				.82***
Proactiveness				.76***
Risk-taking				.80***

*Significant at $p \leq .10$.

**Significant at $p \leq .05$.

***Significant at $p \leq .01$.

Source: Miller, D. The correlates of entrepreneurship in three types of firms. Management Science, 1983, 29, 770-791.

strategy. There were also predicted differences in the correlates of entrepreneurship for each type of firm.

A conceptual and empirical issue in using typologies of firms was illustrated in the study by Miller and Friesen (1982) and Miller (1983). Since most firms vary in the degree to which they fit a particular classification or typology (Mintzberg, 1973), measurement and statistical analysis based on an interval scale level would provide more information and statistical power than a nominal scale level. In both studies (Miller, 1983; Miller and Friesen, 1982) several dimensions were measured on an interval scale and used to make classifications on a nominal scale, so that the full use of the information and statistical power were reduced. There was also a threat of Type II errors in Miller's (1983) study due to a relatively small sample size. Because the sample was divided into three groups, the standard error of a correlation coefficient within a single group was increased due to the reduction in the total sample size so that the power to detect a significant relationship within groups was substantially reduced.

For example, there were 52 respondents included in the analysis of all types of firms, but there were only 18 included in the simple firms group, 18 in the planning firms, and 13 in the organic firms (see Table 2.4). Therefore, the standard error of the product moment correlations would be lowest in the group including all types and highest in the group of organic firms. Examining the correlations within these latter two groups revealed that the lowest significant correlation in the group including all types is $r=.19$; $p\leq.10$, while the lowest significant correlation in the organic firms group is $r=.37$; $p\leq.10$. Thus, the

statistical power was further reduced by breaking the total sample into three separate groups.

The possibility of spurious correlations is another issue in using typologies and might lead to plausible alternative explanations in Miller's (1983) study. For example, if a variable (e.g., organization size) is used to group firms, and then the relationship between two other variables is examined (e.g., centralization and entrepreneurship), then there is the possibility that the relationship between centralization and entrepreneurship is spurious--if there is a relationship between organization size and centralization. In other words, is the effect on entrepreneurship due to organization size rather than centralization--or does organization size also affect entrepreneurship indirectly via its effect on centralization? The interrelationship among these three variables is important because there is evidence that larger organizations tend to become more decentralized (Mansfield, 1973), and Burgelman (1983) also argued that in large, complex organizations the initiatives for corporate entrepreneurship occur at levels below top management. At the same time, Ansoff (1972) noted that entrepreneurial behavior is more frequent when an organization is first created, i.e., smaller organizations. So as organizations become larger and more bureaucratic, do they also become less entrepreneurial and innovative? Therefore, organization size could affect corporate entrepreneurship directly as well as indirectly through its affect on centralization.

Evidence that the underlying relationship between: (1) trait variables and entrepreneurship; and (2) situational variables and

entrepreneurship does not conform to a linear first-order regression model was suggested by Miller's (1983) research. Even though these conclusions can only be tentative, due to the problems discussed previously, some general patterns emerge. The correlation between locus of control of the executive and entrepreneurship varies considerably across the three types of firms (see Table 2.4). For simple firms, there was a high negative correlation ($r=-.66$; $p\leq.01$); for planning firms, there was a moderate negative correlation ($r=-.43$; $p\leq.05$); and for organic firms, there was only a marginal effect ($r=-.16$; not significant at $p\leq.10$). Because the firm classification categories were derived from scores on the situational variables, this suggested the possibility of a moderator/interaction between the trait and situational predictors. Specifically, when the situation was structured so as to promote entrepreneurship, there was a high correlation between the trait predictor and entrepreneurship. As the situation became less favorable, the relationship became weaker, until it was neglible under the least favorable situation.

The possibility that the true response function between predictor variables and entrepreneurship is curvilinear and contains second-order polynomial predictor variables was suggested by the data in Miller and Friesen (1982) and Miller (1983). In Miller and Friesen's (1982) study, the correlations between situational predictors with risk taking and innovation varied from positive to negative depending on the level of risk taking and innovation; and the curvilinear regression analysis using innovation as a predictor supported this proposition. Further support for this notion was suggested by Miller's (1983) study. The

independent variable, centralization, varied in relation to entrepreneurship depending on the level of centralization (see Table 2.4). At high levels of centralization (i.e., in the simple firms), there was a significant positive correlation between centralization and entrepreneurship ($r=.40$; $p\leq.05$); at moderate levels of centralization (i.e., in planning firms), there was no relationship ($r=-.06$; not significant at $p\leq.10$); and at low levels of centralization, there was a strong, negative relationship ($r=-.60$; $p\leq.05$). Moreover, there is even a stronger possibility that this pattern was due to the interrelationship between centralization and organizational size because the high level of centralization group was comprised of small firms (<500) and the moderate level of centralization group was made of up of large firms (>500), while the low level of centralization group was a mixture of large and small firms.

Evidence that the relationship between locus of control and corporate entrepreneurship may be curvilinear was suggested by Miller's (1983) study. While the simple firms had an average score above the total group mean and exhibited the strongest correlation between locus of control and entrepreneurship, the correlations for planning and organic firms were smaller, as were their mean score for locus of control. The sample groups--simple, planning, and organic firms--and the correlations between locus of control and entrepreneurship as well as the mean level of locus of control for each group are presented in Table 2.5. A comparison of the correlations for simple and organic firms, using Fisher's z' transformation yielded a significant difference between the correlation coefficients at $p\leq.06$. In order to make further

Table 2.5. Correlations Between Locus of Control and Entrepreneurship and Mean Levels Across Type of Firm.

Statistic	Simple Firms	Planning Firms	Organic Firms	All Types
Product moment correlations of locus of control with entrepreneurship	-.66***	-.43**	-.16	-.64***
Mean level of locus of control	6.0	4.4	4.4	5.4

**Significant at $p \leq .05$.

***Significant at $p \leq .01$.

Source: Miller, D. The correlates of entrepreneurship in three types of firms. Management Science, 1983, 29, 770-791.

paired comparisons, i.e., simple vs. planning firms and planning vs. organic firms, a Chi-squared test for homogeneity of the correlations using Fisher's z' transformation is necessary. This test was not significant ($p \leq .25$). Two plausible explanations for the Chi-square being nonsignificant, when in fact the true correlations are different (a Type II error) are: (1) the sample size was too small resulting in a large standard error; and (2) had the mean level of locus of control been used to form and rank the three groups, there may have emerged a significant Chi-square. So there is the possibility--even a strong possibility when comparing simple vs. organic firms--that the relationship between locus of control and corporate entrepreneurship is curvilinear.

Examining the theoretical and empirical research on corporate entrepreneurship, four situational variables emerge that may be important predictors of corporate entrepreneurship: (1) centralization (Burgelman, 1983; Miller, 1979, 1983; Miller and Friesen, 1982; Mintzberg, 1973); (2) resource support (Ansoff, 1972; Lawler and Dexler, 1981; Miller, 1983; Miller and Friesen, 1982; Quinn, 1979; Westfall, 1969); (3) entrepreneurial focus (Ansoff, 1972; Miller, 1979, 1983; Miller and Friesen, 1982; Miller, et al., 1982; Mintzberg, 1973; Quinn, 1979; Westfall, 1960); and (4) size of the organization (Ansoff, 1972; Burgelman, 1983; Miller, 1983; Mintzberg, 1973). Based on the preceding review of the literature, the relationship between each of the variables and corporate entrepreneurship was not neccessarily a simple, bivariate one. Miller (1983) also found support for a relationship between top executive locus of control and corporate entrepreneurship, but there may

also be a relationship between need for achievement and corporate entrepreneurship. Both McClelland (1962) and Rotter (1962) have argued that the expression of the traits--need for achievement and locus of control, respectively--into a behavioral response is influenced by the situation, i.e., the opportunity. Miller's (1983) research and empirical results provide a unique opportunity to speculate as to the possibility of an interaction between top executive traits and the situation. An exploratory investigation of the regression parameters which predict the level of corporate entrepreneurship is necessary, which includes linear effects, curvature effects, and interaction effects as well as incorporates causal path analysis, in order to build a model which more accurately portrays the relationship between the predictor variables and entrepreneurship.

Theoretical Model and Summary

Entrepreneurship is a concept inherent in several authors' conceptualization of strategy and the strategic managment concept. Schendel and Hofer (1979) addressed it explicitly as they defined strategic management as "a process that deals with the entrepreneurial work of the organization, with organization renewal and growth" and the development of strategy to guide the organization's operations (p. 11). Ansoff (1972) proposed that an entrepreneurial behavior style is fundamental to the definition of strategic management, while operations management is associated with an incremental style. The entrepreneurial style is concerned with organizational adaptation to the environment and a proactive attitude toward risk and change.

Hofer and Schendel (1978) also developed the strategy concept around the following four components which are similar to Ansoff (1965): (1) product/market scope, (2) resource deployments, (3) competitive advantage, and (4) synergy among levels of strategy. Among the four levels of strategy, (i.e., enterprise, corporate, business, and functional), corporate strategy deals with the level which integrates the businesses and portfolio of an organization--it is also the level which deals directly with corporate entrepreneurship as it focuses on what areas of business the firm chooses to be in. Similarly, corporate strategy would focus more on product/market scope and resource deployments than competitive advantage (business strategy) and synergy among all levels of strategy. Finally, corporate strategy as described by Hofer and Schendel (1978) is like Rothschild's (1979) investment level strategy which requires decisions concerning where to invest; how much capital, cash and managerial commitment to invest; and why to invest.

Several dominant themes emerge from the preceding review of the literature. Adopting the position that entrepreneurship can be studied in a corporate environment, the literature review first overviewed major personality characteristics associated with entrepreneurs. The second major stream of research--corporate level entrepreneurship--focused on the strategic decision making context with the purpose of indentifying organizational characteristics which might potentially stimulate corporate level entrepreneurship. These two fields of research are integrated in the theoretical models in Figures 2.1 and 2.2.

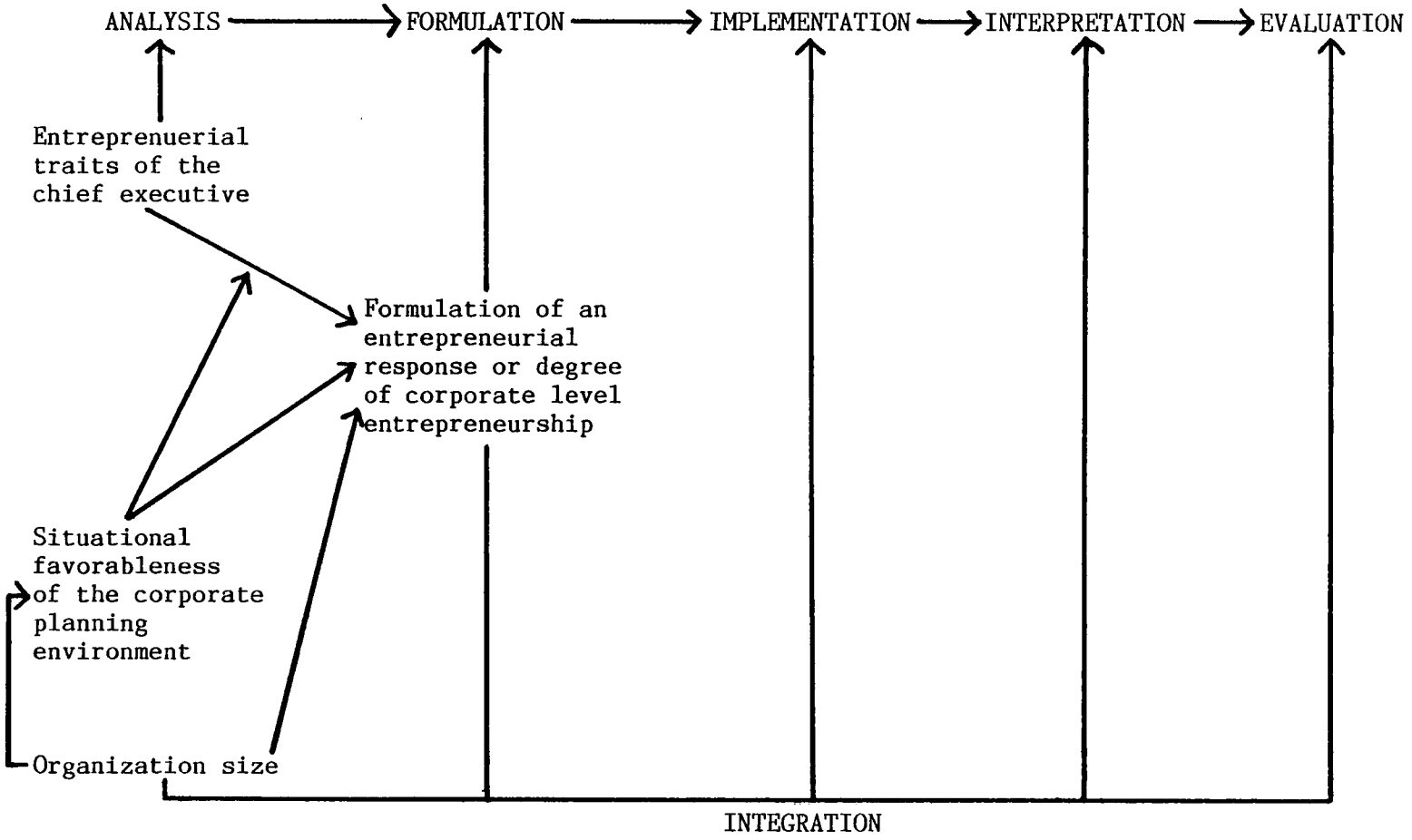


Figure 2.1. Theoretical Model of Major Variables.

Source: The model developed here is based on the model in Hodgetts, R. M., and Wortman, M. S., Jr., Administrative policy. 2nd. ed. New York: John Wiley & Sons, Inc., 1980.

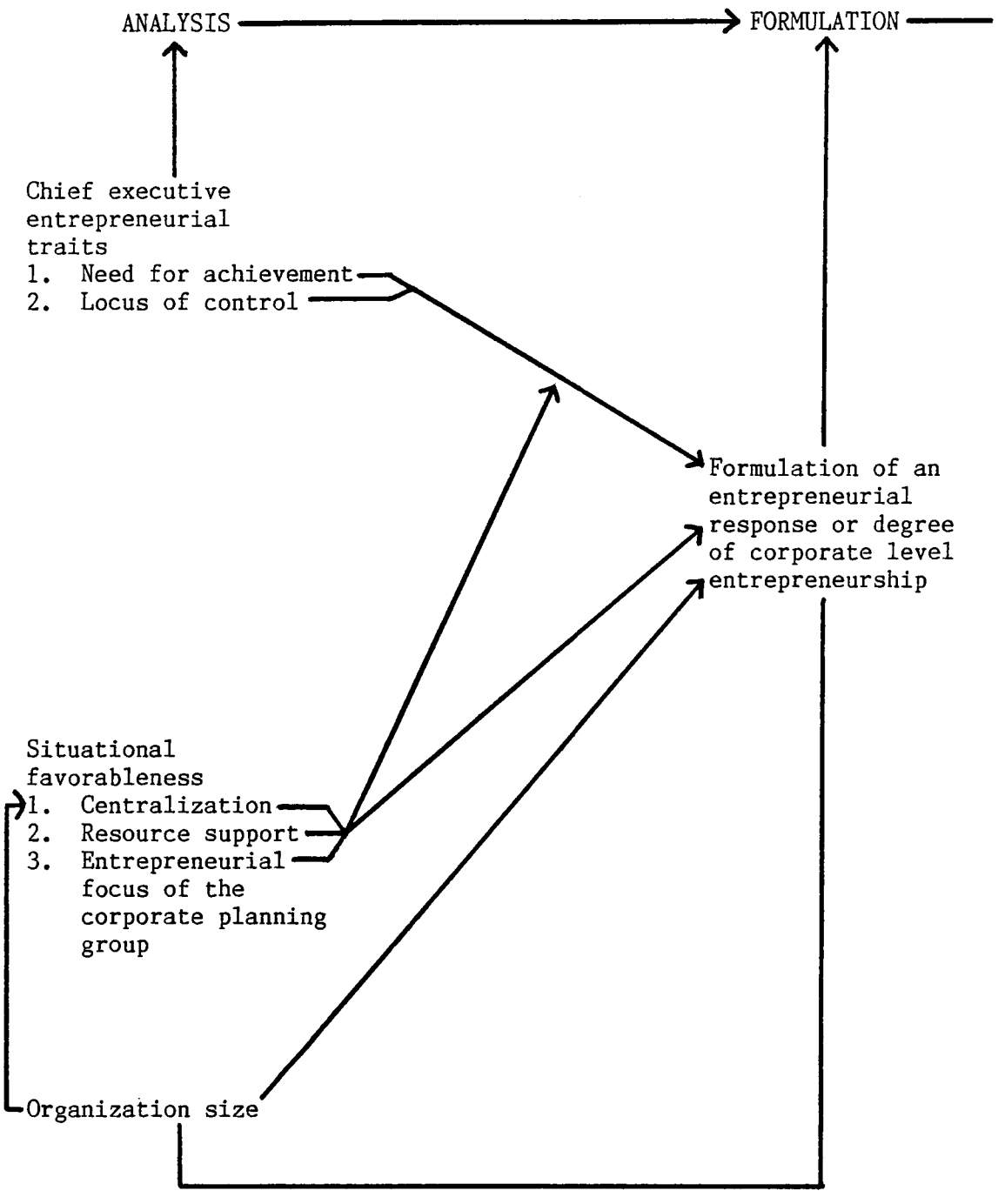


Figure 2.2. Specific Independent Variables Hypothesized to Effect Corporate Level Entrepreneurship.

Hodgetts and Wortman's (1980) model of the strategic management functions is used to integrate theoretical propositions into a strategic management framework (see Figure 2.1). Because this study encompasses a broad range of organizational types and deals with corporate level strategy, their model is appropriate as it is one of the most generalizable of the strategic management frameworks (Boyd and Summers, 1983).

First, entrepreneurial traits of the chief executives are hypothesized to affect the degree of corporate level entrepreneurship (see Figure 2.1). These traits will affect what problems and opportunities are analyzed and whether an entrepreneurial response is then formulated. Second, the degree of situational favorableness will also affect the degree of corporate level entrepreneurship. These main effects are indicated by the lines drawn directly from entrepreneurial traits and situational favorableness to corporate level entrepreneurship. The interaction of both variables is also hypothesized to have an impact on the formulation of an entrepreneurial response--note the arrow drawn from situational favorableness to the line between entrepreneurial traits and corporate level entrepreneurship. In other words, situational favorableness affects the relationship between entrepreneurial traits and corporate level entrepreneurship. Organization size is hypothesized to affect corporate level entrepreneurship directly--note the arrow leading from organization size to corporate level entrepreneurship--and indirectly via its affect on the situation--note the arrow leading from organization size to situational favorableness.

The specific independent variables which comprise chief executive entrepreneurial traits and situational favorableness as well as their relationship to corporate level entrepreneurship are illustrated in Figure 2.2. Both linear and curvilinear effects of need for achievement and locus of control are hypothesized to affect corporate level entrepreneurship. These effects will be summed to arrive at an index representing chief executive entrepreneurial trait potential. Similarly, centralization, resource support, and entrepreneurial focus of the corporate planning group will be summed to develop an index of situational favorableness. Finally, the indirect effect of organization size on corporate level entrepreneurship is hypothesized to occur specifically through its effect on centralization.

CHAPTER 3

SOURCES AND METHOD

In this chapter is described the methodology to be used in the study which includes: (a) definitions, (b) research hypotheses, (c) measures, (d) pilot test, (e) sample, (f) procedure, and (g) summary.

Definitions

The dependent variable and independent variables are defined in this section. In addition, the terms chief executive, corporate planning group, and contingency model are defined.

Dependent Variable

The dependent variable is corporate level entrepreneurship and is defined below.

Corporate level entrepreneurship is the degree to which the organization formulates plans which generate new combinations between organizational resources and environmental fit. Moreover, it involves strategy formulation which is designed to broaden the scope of the firm's activity beyond previous product, market, and/or business operations. A high degree of corporate level entrepreneurship indicates that a firm's present strategy is proactive and innovative involving change into new areas of business. A low degree of corporate level entrepreneurship reflects a strategy that is not innovative, but is focused on problem solving and the internal operation of the organization. In addition, the term refers to strategy formulation at

the corporate level, i.e., the choice concerning the scope and areas of business in which the organization selects to commit its resources (Hofer and Schendel, 1978).

Independent Variables

Several independent variables are defined in the following section including: need for achievement, locus of control, entrepreneurial traits, centralization, resource support, entrepreneurial focus, situational favorableness, and organizational size.

Need for achievement is a personality trait which deals with an individual's motivation to achieve and the tendency to persist and aspire to moderately challenging tasks (McClelland, 1962). While a high degree of need for achievement refers to a greater motivation to achieve and excel at moderately difficult tasks, a low degree of need for achievement indicates a lower motivation to achieve and persist at moderately difficult tasks, i.e., low need for achievement refers to an individual who prefers either easy or very difficult tasks McClelland, 1962).

Need for achievement squared refers to the quadratric term for need for achievement, i.e., taken to the second power.

Locus of control is a personality trait which deals with the extent to which one believes or expects that outcomes are determined by one's own behavior (Rotter, 1966). A high degree of locus of control is indicative of a more internal locus of control and a low degree of locus of control refers to a more external locus of control. Specifically, internal locus of control is defined for an individual as a high

perceived control in situations of personal achievement, i.e., personal efficacy, and an external locus of control is defined as a low perceived control over situations of personal achievement (Paulhus and Christie, 1981).

Locus of control squared is the quadratic term for locus of control, i.e., taken to the second power.

Entrepreneurial traits is a term which is used to represent the composite level of need for achievement and locus of control (including linear and curvilinear effects). Based on the weights which maximize the relationship between each trait and the degree of corporate level entrepreneurship, the contribution of each of these variables is utilized to develop a composite index.

Centralization is the extent to which the power to make decisions--primarily strategic decisions concerning corporate level strategy--is located at the top executive level or lower levels of management in the organization (Miller, 1979). The concept includes two aspects of responsibility--the responsibility for initiating and approving decisions (Miller, 1979). In view of the above, a high degree of centralization reflects decision-making responsibility that is located with the top executive or top level management group, and a low degree of centralization describes decisions that are delegated to lower levels of management, i.e., a decentralized organizational structure.

Resource support is defined as both the existence of slack resources over and above those resources necessary to sustain the organization's established product-market domains, and the extent to which the organization uses its resources to reward corporate level

entrepreneurship. While a high degree of resource support indicates that slack resources exist to invest in corporate level entrepreneurship and that these activities form the basis for the organization's reward system, a low degree of resource support indicates the absence of slack resources and a reward system that is primarily based on conservative, short-term financial considerations.

Entrepreneurial focus refers to the degree to which the corporate planning group, when analyzing the firm's situation and examining alternative courses of action, searches for new, long-term growth alternatives. On the one hand, a high level of entrepreneurial focus defines a corporate planning group which actively seeks new alternatives which optimize long-term growth opportunities. On the other hand, a low degree of entrepreneurial focus illustrates a corporate planning group which is more concerned with the analysis of short-term problems and internal organizational efficiency.

Situational favorableness is a term which shows the degree of centralization, resource support, and entrepreneurial focus of the corporate planning environment. To derive a composite index, the contribution of each of these variables is determined by the weights which maximize the relationship between each variable and the level of corporate level entrepreneurship.

Organization size refers to the number of employees and the amount of annual sales in 1985 for each organization.

Other Terms Used in the Study

In addition to the preceding variables, the terms chief executive, corporate planning group, and contingency model are defined below.

Chief executive is the individual whose title is chief executive officer or president where the title chief executive officer is not used.

Corporate planning group refers to the chief executive and those individuals with whom the chief executive interacts, either formally or informally, and who provide input into the firm's planning process.

Contingency model describes a situation where the relationship between two variables depends (i.e., is contingent) on the level of a third variable. Specifically, this study hypothesizes that the relationship between chief executive entrepreneurial trait potential and corporate level entrepreneurship is contingent upon situational favorableness. The higher the degree of situational favorableness, the stronger will be the relationship between entrepreneurial traits and corporate level entrepreneurship.

Hypotheses

The theoretical hypotheses are discussed in this section. The first two sets of hypotheses are organized into groups. In each group, the independent variables constitute one model for predicting the level of the dependent variable--corporate level entrepreneurship. In total, there are ten hypotheses--four in the first group, three in the second group, and three hypotheses which follow the former two groups. Each independent variable and its hypothesized relationship to the dependent

variable is stated followed by the theoretical rationale for the predicted relationship.

Theoretical Hypothesis: H1A

There is a positive linear relationship between degree of need for achievement and degree of corporate level entrepreneurship, over and above any negative linear effect of locus of control, and any second degree curvilinear effect of locus of control.

High need for achievement will be positively related to corporate level entrepreneurship because an executive who is motivated to achieve will be able to satisfy this need by directing the organization into entrepreneurial activities (McClelland, 1962). Corporate level entrepreneurship involves a higher risk strategy because it moves the organization into new areas and involves change. This type of situation is preferred by the high achiever, and the relationship between risk preference and corporate level entrepreneurship will be a curvilinear one (Atkinson, 1966; McClelland, 1962). At low levels of risk, the high achiever will not get a strong sense of personal accomplishment because the task is easy. At high levels of risk, the achiever is less likely to succeed and therefore reap any satisfaction. At intermediate levels of risk, the achiever is best able to maximize a sense of personal accomplishment (McClelland, 1962).

Because executives are responsible for the organization's success or failure (Hodgetts and Wortman, 1980), corporate level entrepreneurship will provide the high achiever the opportunity to use his/her skills. Finally, when an executive pursues an innovative

strategy, feedback concerning the organization's performance is concrete, e.g., sales and market growth. These characteristics associated with corporate level entrepreneurship are the type that the high achiever prefers, i.e., those that involve feedback, personal responsibility, and an intermediate level of risk.

Theoretical Hypothesis: H1B

There is a positive second degree curvilinear relationship between degree of need for achievement and degree of corporate level entrepreneurship, over and above any positive linear effect of need for achievement, any negative linear effect of locus of control, and any second degree curvilinear effect of locus of control.

The true response function of the relationship between need for achievement and corporate level entrepreneurship should become stronger as the degree of need for achievement increases. In Wainer and Rubin's (1969) study, the high need for achievement group exhibited a substantially higher company growth rate than the moderate or low need for achievement groups. This pattern implies that the level of need for achievement may have to reach a threshhold value before the relationship between need for achievement and corporate level entrepreneurship becomes significant. If the relationship between need for achievement and corporate level entrepreneurship is monotonic, but nonlinear, failure to incorporate a polynomial effect into the model could markedly underestimate the true association between these variables.

Theoretical Hypothesis: H1C

There is a positive linear relationship between degree of internal locus of control and the degree of corporate level entrepreneurship, over and above any positive linear effect of need for achievement, and any second degree curvilinear effect of need for achievement.

Internal locus of control will be positively related to corporate level entrepreneurship because an individual who believes that performance outcomes are the result of personal efforts and ability will be more likely to pursue entrepreneurial ventures than a person who believes that the success of the innovation in not under one's personal control (Brockhaus, 1975; Pandey and Tewary, 1979; Shapero, 1975).

Theoretical Hypothesis: H1D

There is a positive second degree curvilinear relationship between locus of control and corporate level entrepreneurship, over and above any positive linear effect of need for achievement, any second degree curvilinear effect of need for achievement, and any negative linear effect of locus of control.

Based on Miller's (1983) study, the true response function of the relationship between locus of control and corporate level entrepreneurship is hypothesized to become stronger as the mean level of locus of control increases. Over a range of scores on locus of control, it appears that at low levels, the relationship between locus of control and corporate entrepreneurship is marginal, but that at higher levels the relationship becomes stronger. In other words, the level of locus

of control may have to approach some threshhold value before the relationship between locus of control and corporate level entrepreneurship becomes significant.

Theoretical Hypothesis: H2A

There is a positive linear relationship between degree of centralization and degree of corporate level entrepreneurship, over and above any positive linear effect of resource support, and any positive linear effect of the entrepreneurial focus.

Centralization is hypothesized to have a positive effect on the degree of corporate level entrepreneurship because power that is centralized with the chief executive and/or strategic planning group is necessary for the latter to have the capability to innovate and change the strategic direction of the organization (Mintzberg, 1973). A high level of corporate level entrepreneurship could involve substantial, dramatic change in all parts of the organization, so that in order for the entire organization to move forward, such change needs to be guided by the vision and direction of a centralized power structure, i.e., top executives or top management.

Theoretical Hypothesis: H2B

There is a positive linear relationship between degree of resource support and degree of corporate level entrepreneurship, over and above any positive linear effect of centralization, and any positive linear effect of entrepreneurial focus.

Availability of sufficient resources is necessary to support corporate level entrepreneurship (Westfall, 1969). Organizations with a high level of resource support will have the capability to support corporate level entrepreneurship. Organizations with a low level of slack resources will need their existing capital resources to support their present product/market domains. A low level of resource support will act to constrain corporate level entrepreneurship.

Rewards that are consistently tied to a high degree of corporate level entrepreneurship will serve as a strong incentive and reinforcement of such activities (Ansoff, 1972; Lawler and Dexler, 1981; Quinn, 1979). Further, because corporate level entrepreneurship involves more risk of failure than maintaining status quo or present product/market domains, reward systems which reinforce the latter, more conservative behavior will stifle or constrain corporate level entrepreneurship.

Theoretical Hypothesis: H2C

There is a positive linear relationship between the degree of entrepreneurial focus and corporate level entrepreneurship over and above any positive linear effect of centralization, and any positive linear effect of resource support.

A high level of entrepreneurial focus will be associated with a high degree of corporate level entrepreneurship. First, it will make the chief executive and corporate planning group more aware of potential solutions or strategies that would be illustrative of corporate level entrepreneurship. Second, a high degree of entrepreneurial focus would

provide the type of decision environment which would support and encourage the expression of corporate level entrepreneurship; whereas, a low level of entrepreneurial focus would act to constrain the degree of corporate level entrepreneurship and be more supportive of maintaining stability in the organization's present product/market domain. Specifically, if the focus of the corporate planning group is on change (Ansoff, 1972) and oriented to the long-term growth and development of new opportunities, there will be a higher degree of corporate level entrepreneurship (Ansoff, 1972; Miller, 1979, 1983; Miller and Friesen, 1982; Miller, et al., 1982; Mintzberg, 1973; Quinn, 1979; Westfall, 1969).

Theoretical Hypothesis: H3

As the degree of situational favorableness increases, the relationship between degree of entrepreneurial traits and degree of corporate level entrepreneurship will become stronger and more positive, over and above any positive main effect of entrepreneurial traits and any positive main effects of situational favorableness.

Before giving the theoretical rationale for Hypothesis H3, the specific form of the hypothesized relationship is elaborated. The relationship between level of entrepreneurial traits and corporate level entrepreneurship is predicted to be strongest when degree of situational favorableness is high. If entrepreneurial traits are high, but situational favorableness is low, a moderate relationship between entrepreneurial traits and degree of corporate level entrepreneurship is hypothesized because the situational favorableness will act to constrain

or moderate the relationship between entrepreneurial traits and corporate level entrepreneurship. If entrepreneurial traits are low, but situational favorableness is high, entrepreneurial traits are hypothesized to moderate the relationship between situational favorableness and corporate level entrepreneurship. Both of the previous examples would be illustrative of a lack of fit, or mismatch between entrepreneurial traits and situational favorableness. Finally, if both the level of entrepreneurial traits and situational favorableness are low, then the relationship between entrepreneurial traits and degree of corporate level entrepreneurship is predicted to be low.

Need for achievement and locus of control deal with an individual's motivation and beliefs, respectively. McClelland (1962) stated that opportunity and motivation interact to predict a response and that high achievers are more ready to respond when the opportunity arises. Rotter (1962) similarly explained behavioral outcomes of the locus of control individual in terms of response in the same or similar situations. Thus both recognized that the tendency for these traits to be expressed in performance is limited or encouraged by the situation. Each of the variables comprising situational favorableness--centralization, resource support, and entrepreneurial focus—will influence the capability of and support for the chief executive to express his/her entrepreneurial traits in corporate level entrepreneurship. Therefore, it is more likely that a corporation will have the highest level of entrepreneurship if the trait potential is high and the situation is structured appropriately.

Theoretical Hypothesis: H4

There is a negative linear relationship between organizational size and degree of corporate level entrepreneurship, over and above any positive linear effect of centralization.

Although Miller and Friesen (1982) did not find significant differences in organizational size between entrepreneurial and conservative firms, Mintzberg (1973) and Ansoff (1972) have argued that larger organizations tend to be less entrepreneurial than smaller organizations because size limits an organization's ability to be flexible and responsive to environmental demands. The rationale behind this position is that large firms stifle innovation through organizational structure mechanisms which permit efficient control over operations yet render the organization inflexible (Ammer, 1970; Lawler and Dexler, 1981).

Theoretical Hypothesis: H5

There is an indirect negative linear effect of organizational size on degree of corporate level entrepreneurship via the level of centralization.

Mansfield (1973) argued that as organizations become larger in size and more complex, it becomes more difficult for one individual, i.e., the top executive, to maintain control of the organization. Burgelman (1983) proposed a similar argument, that corporate entrepreneurship in large, complex organizations occurs at lower management levels because top management lacks the understanding necessary to engage in

entrepreneurial activity. Thus the authority to innovate must be delegated to lower levels of management who possess the expertise and knowledge to make decisions relating to corporate entrepreneurship. If there is a negative linear relationship between organizational size and level of centralization, this would mean that organizational size indirectly affects corporate level entrepreneurship by directly influencing level of centralization (which according to Hypotheses H2A and H3 will affect corporate level entrepreneurship).

Although this hypothesis has been tested and supported in previous studies (e.g., Mansfield, 1973), it has been included in this study in an attempt to clarify how organizational size might indirectly (as tested in this hypothesis) or directly (as tested in the preceding hypothesis--H4) effect corporate level entrepreneurship.

Measures

Measures that are available with established psychometric properties and that are relevant to the constructs in this study were used. Where this was not possible, the development of appropriate measures has been described. The measure for each variable has been presented in Appendix A. These measures were combined into one questionnaire for administration in the pilot study.

Corporate Level Entrepreneurship

The dependent variable, corporate level entrepreneurship, was measured with both an objective and a subjective scale. The objective measure of corporate level entrepreneurship was measured by the number

of different Standard Industrial Classification (SIC) codes listed in the Million Dollar Directory (1985) for a given firm.

The development of questionnaire items for the subjective scale of corporate level entrepreneurship is based on the empirical (Miller, 1983) and theoretical (Ansoff, 1972; Miller, 1983; Miller and Friesen, 1978, 1982; Quinn, 1979) knowledge of the concept. The initial item pool is presented in Appendix A-1. Each item is based on a Likert scale format using five scale points (Van de Ven and Ferry, 1980) ranging from strongly agree to strongly disagree. Questions 1, 3, and 5 are scaled so that the higher the level of agreement, the higher the degree of corporate level entrepreneurship. Questions 2 and 4 are scaled so that the lower the level of agreement, the higher the degree of corporate level entrepreneurship. The latter two questions were reverse scored for the analysis so that the higher the composite score, the higher the degree of corporate level entrepreneurship.

For each questionnaire item, three of the five scale points represent gradations in low values of corporate level entrepreneurship, and two scale points divide the intervals for high values of corporate entrepreneurship. The rationale for partitioning the five levels on this basis stems from two sources. Ansoff (1972) argued that in practice, most organizations are not entrepreneurial. Further, an examination of Miller and Friesen's (1982) data revealed that the majority of the firms were in fact conservative--not entrepreneurial. Based on a 7-point measurement scale, their total sample (n=52) was divided into two groups. Those firms which fell below the mean on both product innovation and risk taking were classified as conservative

(n=29). Firms which scored above the mean on both product innovation and risk taking comprised the entrepreneurial group (n=18). Thus, adjusting for finer gradations in low values of corporate level entrepreneurship will probably allow for the detection of greater variation or differences in corporate level entrepreneurship.

Need for Achievement

Need for achievement was measured using a modified version of Hermans' (1970) achievement motivation scale. His scale was chosen for three reasons: (1) economy and ease of administration and analysis; (2) construct validity, i.e., similarity to McClelland's (1953) TAT; and (3) reliability. First, for economy and ease of administration and analysis, the scale is superior to McClelland's (1953) original TAT (Wortruba and Price, 1975). Second, Wortruba and Price (1975) compared McClelland's (1953) TAT with three other measures of achievement motivation. Hermans' (1970) scale was the only one to correlate significantly with the TAT. The reliability estimate of the scale is presented after a discussion of the item selection and modifications to the scale.

There were two stages of modification in the development of the final questionnaire for the pilot study. First, items were selected which theoretically were the most similar to McClelland's (1971) original conceptualization of the construct. These selected items comprised three major categories identified by the cluster analysis, i.e., characteristics dealing with aspiration level, persistence, and

achievement behavior. The resulting eleven items are reproduced in Appendix A-2.

The second stage of modification consisted of eliminating Question 5 and minor alterations in the wording and the response format of the remaining ten questions. Question 5 was excluded on the basis that the topic "shopping" was judged to be irrelevant to the definition of need for achievement used in this study. Adjustments to the remaining ten items involved changing the number of responses for each item to equal five for consistency (Questions 5, 6, and 7) and changes in the wording of Question 9 to reflect a moderately difficult task situation. The revised questionnaire is presented in Appendix A-3.

The reliability of the scale and individual items are described by Hermans (1970). The original 29 items have an internal consistency reliability of .82. Applying the Spearman-Brown formula (Magnusson, 1966) for an estimate of the reliability of a measure that has been reduced to one third (29 items to 10 items) and using a reliability coefficient of .82, the estimated reliability of the shortened version is approximately .60. This is an adequate level for a moderately broad construct (Van de Ven and Ferry, 1980).

Need for Achievement Squared

To measure the curvilinear effect of need for achievement, the raw score for each respondent on the need for achievement scale (Hermans, 1970) was squared.

Locus of Control

Locus of control was measured using the personal efficacy subscale of Paulhus and Christie's (1981) locus of control scale. This measure was chosen for three reasons: (1) economy and ease of administration, (2) theoretical relationship to the hypotheses being tested, and (3) reliability. First, the personal efficacy measure is easier for respondents to fill out and takes much less time to complete than Rotter's (1966) measure of locus of control (Paulhus and Christie, 1981). Second, Paulhus and Christie's (1981) locus of control scale has a substantial correlation with Rotter's (1961) scale (r=.75); yet the three subscales, based on a series of factor analytic studies, reveal the multidimensionality of the construct. Since the personal efficacy scale concerns an individual's personal control, it is the most relevant to the theoretical rationale for the hypothesized linkage between locus of control and corporate level entrepreneurship. The other two scales concern an individual's sociopolitical control and interpersonal control. The psychometric properties of the personal efficacy measure are discussed by Paulhus and Christie (1981). The coefficient alpha of the scale is .75 for the 10 items in Appendix A-4.

There are seven scale points of a Likert type format ranging from strongly disagree to strongly agree. Questions 1, 2, 4, 5, 7, and 9 are keyed so that high levels of agreement will indicate a subject who is high on internal locus of control. Questions 3, 6, 8, and 10 are keyed in an external locus of control direction and were reverse scored for the analysis such that a high score on all items was indicative of a

high internal locus of control and a low score was indicative of a high external locus of control.

Locus of Control Squared

The curvilinear effect of locus of control was determined by squaring the raw score for each respondent on the locus of control scale (Paulhus and Christie, 1981).

Entrepreneurial Traits

The composite scale for entrepreneurial traits was measured by summing the scale values for each chief executive on need for achievement, need for achievement squared, locus of control, and locus of control squared.

Centralization

Similar in response format to the measure used by Miller and Friesen (1982), the initial item pool for the centralization measure is presented in Appendix A-5 . There are five scale points for the four items ranging from the top executive (which indicates the highest level of centralization) to middle level managers (which indicates the lowest level of centralization). In addition, the scale points are anchored to take into account a divisional or a functional organizational structure.

Resource Support

The resource support questionnaire is in Appendix A-6, and there is a total of four questionnaire items to measure this construct. Ranging from strongly agree to strongly disagree, each item is based on a Likert scale format using five scale points (Van de Ven and Ferry, 1980).

Higher levels of agreement for Questions 1, 2, and 4 indicates a higher level of resource support, and for Question 3, a high level of agreement indicates a low level of resource support--the latter item was reverse scored for the analysis.

Entrepreneurial Focus

The entrepreneurial focus of the corporate planning group questionnaire items are presented in Appendix A-7. The first question asks the respondent to check one of two statements about the formality of the organization's corporate planning and was used descriptively when reporting sample characteristics. Each of the five items is based on a Likert scale format with five scale points (Van de Ven and Ferry, 1980) ranging from strongly agree to strongly disagree. Strong agreement with Questions 1, 2, 4, and 5, and strong disagreement with Question 3 are scaled to indicate a high level of entrepreneurial focus. Question 3 was reverse scored for the analysis.

Situational Favorableness

To assess the degree of situational favorableness, the scale values for each respondent on centralization, resource support, and entrepreneurial focus were summed into a composite index.

Organization Size

Organization size was determined from the Million Dollar Directory (1985) which includes information for the total number of employees and total sales. However, because the Million Dollar Directory sometimes does not include the total number of employees, the respondents were

also asked to indicate the total number of full-time employees on the questionnaire. Number of employees was used in the hypothesis testing (Broom, Longnecker, and Moore, 1983) and both number of employees and total sales, when applicable, were used descriptively when reporting sample characteristics.

Pilot Test

The procedure, purpose, and results of the pilot study are described in this section. In discussing the purpose of the pilot study, the specific questions addressed to the respondents are enumerated. The discussion of the results incorporates the changes in the measuring instruments which resulted from the pilot test.

Procedure

A total of ten organizations was contacted for participation in the pilot study. Of these ten firms, five chief executive officers were out of town. The other five chief executive officers agreed to participate in the pilot study. Each organization headquarters was located in Knoxville, Tennessee. Two chief executive officers--whose names were obtained from the office of the Board of Trustees at the University of Tennessee--agreed to participate in the pilot study. The other respondents were selected randomly from the Knoxville area.

An on-site interview was conducted after contacting each chief executive officer by telephone and scheduling an appointment. To begin the interview, the purpose of the pilot study was explained and each respondent was encouraged to be candid and critical in their evaluation

of the questionnaire so that improvements could be made before conducting the main study.

At the first interview, the chief executive officer filled out the questionnaire in private and returned responding that the questionnaire was "excellent." Several specific questions were then asked. Each time the respondent replied that the questionnaire was clear and appeared to want to end the interview. Therefore, on subsequent interviews, a request was made that the chief executive officer fill out the questionnaire with the researcher present. This technique resulted in more specific feedback and input as the chief executive officers were better able to express their reactions as they filled out the questionnaire. After the respondent completed the questionnaire, eleven questions concerning the purpose of the pilot study were asked if the question/s had not already been covered in the interview. By the fourth and fifth interviews, a similar pattern emerged in the respondents' reactions to the questionnaire so the pilot study was ended.

Purpose

The purpose of the pilot study was to ascertain whether or not the chief executive officers understood the directions and questionnaire items. Respondents were questioned as to their general reactions to the study, possible difficulties or confusing areas, and suggestions for modifying any part of the study. The specific questions asked during the interview, beginning with the more open-ended questions and ending with more specific questions, were as follows:

1. Was the questionnaire relative easy to fill out?

2. Did you have any difficulties with the questionnaire?
3. Do you have any suggestions for improvement?
4. Do the questions apply and fit appropriately with your particular organization?
5. Are the questions and choices worded clearly?
6. Is the choice of answers offered inclusive of all the choices you prefer to give?
7. Did you feel like there were "right" or "wrong" answers?
8. Was the first page of the questionnaire relatively easy to fill out and motivate your interest in the rest of the questionnaire?
9. Did you have any problems with terminology, e.g., strategic planning?
10. Did you have any difficulty thinking back as far as "your most recent, (e.g., annual) strategic plans?"
11. Did you have any difficulty with the last four questions?

Results

Overall, the reactions of the respondents to the questionnaire were positive. The average time needed to complete the questionnaire was 11 minutes. Because the questionnaire was relatively short, the decision was made to increase the number of items in the questionnaire for the main study in order to increase the reliability of the measures. The total number of items in the questionnaire for the pilot study was 39 and in the questionnaire for the main study, the number of items was increased to 56 (see Appendix B for the revisions of measures for the

main study). The specific changes made from the pilot to the main study for each measure are discussed below. The decision to change a measure or item was based on the specific input or recommendations of the pilot study participants as well as the descriptive statistics in Table 3.1.

Corporate level entrepreneurship. Minor changes were made in Items 1 and 5 (refer to Appendix A-1). Based on suggested modifications from the chief executive officers, Item 1 was expanded to include new services as well as new product, market, and business areas. Item 5 was simplified and shortened to improve the clarity and ease of understanding. The revised measure is shown in Appendix B-1.

Need for achievement. Most of the respondents had difficulty with Item 8 which referred to when the respondent was in school (see Appendix A-2). There seemed to be three difficulties which led the chief executive officers to recommend omitting the question. First, many years had elapsed since the respondents had attended school and they found it difficult and, even stated that the question was irrelevant, to recall events so long ago. Second, the respondents were not clear as to whom the pronoun "they" referred to in the question. Third, most of the chief executive officers held not only an undergraduate college degree, but one or more graduate degrees, and they were confused as to which school was appropriate in responding to the question. Therefore, Item 8 was eliminated.

In an attempt to increase the reliability of the measure, however, all of the original 29 items in Hermans' (1970) achievement motivation scale were included except those items which referred to "school" or the

Table 3.1. Descriptive Statistics of Measurement Scales in the Pilot Study: Mean Scores, Ranges, and Standard Deviations.

Descriptive Statistics	Corporate Level Entrepre-neurship	Need for Achieve-ment	Locus of Control	Central-ization	Resource Support	Entrepre-neurial Focus
Mean score	16.40	43.40	50.60	17.20	13.80	19.20
Range	14–19	40–48	33–56	16–18	12–15	17–21
Standard deviation	1.82	3.44	9.86	1.10	1.10	1.79

item related to "shopping." The net effect of omitting Item 8 and including 7 new items from the original scale was an increase from 10 questions in the pilot study to 16 questions in the main study (see Appendix B-2).

Locus of control. No changes were made in this scale. None of the respondents suggested any changes and all of the participants reported that the items were clear, easy to answer, and interesting questions to begin the questionnaire. Further, the standard deviation for this scale was considerably greater than the other scales.

Centralization. The standard deviation for this scale was one of the lowest of the measures. Although the items appeared to be worded clearly, the response choices were somewhat confusing. The chief executive officers had difficulty choosing between "chief executive" and "chief executive/corporate management" (see Appendix A-5). Because of these problems, and since centralization is a key variable in a number of the hypotheses to be tested, Miller and Friesen's (1982) measure of centralization with 12 items was used in the main study (see Appendix B-3). Miller and Friesen (1982) report that the Cronbach alpha for the measure is .79 as an estimate of the reliability.

Resource support. The standard deviation for this scale was also one of the lowest of the measures and Item 2 appeared to be difficult to answer in the pilot test (see Appendix A-6). Item 2 deals with the degree to which organizational rewards are tied to the development of long-term vs. short-term opportunities. The respondents stated that

organizational rewards were tied to both long-term and short-term opportunities. For clarity, then, Item 2 was divided into two separate questions--with Item 2 in the main study referring to long-term opportunities and Item 5 referring to short-term opportunities (see Appendix B-4). Item 5 was reverse scored for the analysis.

Entrepreneurial focus. The standard deviation for this scale was relatively low and Item 1 was unclear to several of the respondents (see Appendix A-7). The confusion was based on the same problem with Item 2 in the resource support scale in that Item 1 referred to the emphasis on the development of long-term opportunities vs. internal problem solving and efficiency. Therefore, this item was rewritten into two questions for the main study where Item 1 refers to the development of long-term opportunities and Item 2 refers to internal problem solving (see Appendix B-5). In addition, another question was added to the scale concerning the use of long-term forecasting of trends in strategic decision making.

Organization size. In comparing the number of employees reported in the Million Dollar Directory (1985) with the number of employees reported by the chief executives in the pilot study, discrepancies were noted for several of the organizations. One of the respondents also reported that there was a cyclical trend of employment in his organization. Therefore, in the main study, the number of average full-time employees reported by the respondent on the questionnaire was used in the analysis.

Sample

The power analysis to estimate the necessary sample size was based on four parameters--the number of predictors in the regression model with the largest number of predictors; the estimated effect size; power; and significance criterion. The largest number of predictors in any of the regression models is four, so a total of four independent variables was used to determine the appropriate sample size. To determine the effect size, two values were estimated--the semipartial correlation for a single independent variable and the multiple correlation for all the independent variables in a given regression model. Based on Miller's study, a large effect (r=.5) was used to estimate the latter value--the multiple r including all independent variables. To estimate the value of the semipartial correlations, a medium effect size was used (r=.36). This more conservative estimate was employed since the nature of this analysis was exploratory. The desired power was set at the .80 conventional level (Cohen, 1977). The significance level was set at $p \leq .05$. Within these parameters, the necessary sample size equaled 51 (see Appendix C).

Miller's (1983) sample group was used as a reference point for determining the appropriate sample characteristics in this study since it was an empirical study which: (1) focused on corporate entrepreneurship; (2) had strong, significant correlations for the variables included in the study indicating that the sample provided the opportunity to observe considerable variance in levels of corporate entrepreneurship and other variables--which is a prerequisite for

detecting significant relationships among variables; and (3) had results from which some of the hypotheses in this study were generated.

Two salient characteristics were evident in Miller's (1983) sample. First, although the sample had limited generalizability in that it only encompassed organizations in one geographic region, it had a broad representation of types of businesses, i.e., retailing, furniture manufacturing, broadcasting, pulp and paper, food, plastics, electronics, chemicals, meatpacking, publishing, construction, and transportation. A broad range in types of organizations may be necessary to observe a wide variation in degree of corporate level entrepreneurship. A broad sample will also probably introduce some extraneous "noise" if there are significant differences in corporate level entrepreneurship due to the industry an organization is in. However, since Miller's (1983) study resulted in strong, significant correlations, it appears that it is not necessary to control for industry differences (e.g., sample a single industry), but it is important to assure a broad range of responses in corporate level entrepreneurship.

Second, the sample group varied considerably in sizes of organizations, with 500 employees being a critical level in distinguishing simple from planning firms. Since some of the hypotheses in this study are based on Miller's (1983) findings across simple, planning, and organic firms, and since organizational size may affect corporate level entrepreneurship and centralization (see Hypotheses H4 and H5, respectively), the sample should contain a range of firms above and below 500 employees.

The Million Dollar Directory (1984) was used to select a stratified, random sample of businesses. The Million Dollar Directory (1984; 1985) includes industrial concerns which are categorized by the Standard Industrial Classification (SIC) codes as well as utilities, transportation companies, banks and trust companies, mutual and stock insurance companies, wholesalers and retailers, and some subsidiaries. Foreign corporations are not included, nor are professional and consulting organizations (e.g., hospitals and engineering services), credit agencies, and financial and insurance institutions other than those specified previously.

The Million Dollar Directory (1984) data base is divided into three volumes: (1) Volume I lists businesses with net worth exceeding $1,910,000; (2) Volume II lists businesses with net worth from $959,000 to $1,910,000; and (3) Volume III lists businesses with net worth from $500,000 to $959,000. Geographic regions are also divided by states. To select businesses which are stratified by organizational size and geographic proximity requires a tedious procedure of matching a business in a particular geographic region with the alphabetical listings of all businesses in the United States to determine the number of employees and sales. For example, starting with businesses in Tennessee in Volume II, an examination of the first 20 businesses revealed that the largest organization employed only 170 individuals. However, an examination of the first 20 businesses in Volume I revealed 5 businesses with 500 or more employees in Tennessee, with a range from 3 to 1,900 employees. Thus, it appears that the Million Dollar Directory (1984) provides the needed range and variance in organizational size sampling from the state

of Tennessee, but it is not clear whether this provides a large enough population from which to draw a stratified random sample.

Therefore, a computer search procedure was initiated in stages and the procedure was based on the capabilities of the computer program and financial considerations (e.g., it would cost $1.00 per firm to simply list the firms by number of employees plus $100.00 per hour in computer time). First, the organizations were divided into ten groups based on number of employees and the computer search first indicated the number of organizations within each of the ten groups (see Table 3.2).

The initial search indicated that if the response rate for this study reached 40 per cent, then the appropriate sample size (n=51) could be obtained from Tennessee firms, i.e., approximately half the sample needed to contain organizations with 500 employees or more and the total number of organizations in this range (after adjusting for the pilot study) was 64. Therefore, all organizations in this range were surveyed. Also, the group of organizations containing 400-499 employees only numbered 12 and all these organizations were included in the study. Since there was a greater number of organizations in the other groups, i.e., 0-99, 100-199, 200-299, and 300-399, a random sample of 13 organizations was taken in each group. The result was that the population of Tennessee firms with 400 employees and above was surveyed, and a random sample of Tennessee firms below 400 employees was taken.

The next stage of the computer search involved securing a list of the names of a total of 128 firms. The 1985 volume of the Million Dollar Directory had recently been published. This volume was used to record information about each firm because the information was the most

Table 3.2. Population and Sample Resulting from the Initial Computer Search for Tennessee Firms.

Number of Employees	Population	Pilot Study	Sample
0-99	1,535	2	13
100-199	192		13
200-299	72	1	13
300-399	37	1	13
400-499	12		12
Total	1,848		64
500-599	16	1	15
600-699	6		6
700-799	3		3
800-899	5		5
900-up	35		35
Total	65		64

Source: Million Dollar Directory. Dun's Marketing Services, 1984.

current. The information about each firm was recorded in a computer software program in groups of 32. Four separate mailings of 32 organizations were planned within a week of each other in order to assess the response rate and make adjustments in the total sample. There were three possible outcomes: (1) the response rate would be relatively high such that less than 128 organizations would need to be sampled, e.g., only three mailings of 32 were necessary; (2) all 128 firms would need to be sampled and would provide the necessary sample size; and (3) more that 128 firms would be necessary in which case organizations outside the state of Tennessee would need to be considered. Of the 128 firms, 120 were listed with the Million Dollar Directory (1985). Therefore, 3 groups of 32 organizations were developed and a fourth group contained 24 firms.

Procedure

A mail survey was the method used for collecting data. This section describes the development of the cover letter, the initial mailing, the follow-up phone calls, correspondence, and other problems encountered in the study. The cover letters, questionnaire, and other correspondence are in Appendix D.

Cover Letter

At the outset, a great deal of emphasis was placed on the development of the cover letter (see Appendix D-1). The cover letter is especially important to mail surveys for a number of reasons. The cover letter: (1) is typically the first part of the survey package that the

respondent examines; (2) introduces the survey and should motivate the respondent to participate in the study; and (3) is the sole opportunity the researcher has to anticipate and counter questions the respondent might have (Dillman, 1978).

The initial paragraph of the cover letter was designed to communicate an altruistic appeal and explain the purpose of the study. Dillman (1978) recommended this approach as well as referencing a group with which the respondent identifies. Therefore an appeal was made to the challenges facing business firms in Tennessee. Houston and Nevin (1977) have empirically demonstrated that a social utility appeal is most effective for universities in terms of response rates and that the altruistic appeal is the most effective in obtaining response speed and response completeness. Two specific recommendations of Houston and Nevin were incorporated into the cover letter—(1) the first sentence of the letter began with the statement "YOUR ASSISTANCE IS NEEDED!" and (2) the closing statement/paragraph of the cover letter thanked the respondent for his/her cooperation. Finally, because the source of the mail survey potentially influences the response rate, a University of Tennessee, Department of Management letterhead was used and the final statement in the letter also reemphasized the source as well as the altruistic appeal.

The second paragraph of the cover letter was designed to communicate that the chief executive officer was important to the success of the study—with the immediate objective of preventing the survey from being forwarded to another individual in the organization (Dillman, 1978). The chief executive was referenced initially as well

as later in the paragraph, and the importance of studying chief executive personality traits was emphasized (and chief executive's traits were also referenced in the introductory paragraph explaining the purpose of the study). Because several of the hypotheses in this study hinged on achieving a representation of organizational sizes, the importance of their organization to the success of the study was also communicated. Finally, how each organization was selected was mentioned, i.e., a random sample.

The third paragraph of the cover letter was designed to communicate the ease and relatively short amount of time required to complete the questionnaire. In fact, one of the criteria for selecting particular measures and in developing other measures was to minimize the amount of effort and time required on the part of the respondent. The enclosure of a book premium was also mentioned in this paragraph.

In a special effort to obtain the cooperation of the chief executive officers and to distinguish the survey from the many possible surveys that these respondents are typically asked to complete, a copy of Fisk and Barron's (1984) book entitled The Official MBA Handbook of Great Business Quotations was enclosed in the mailout package. The book premium retails for $5.95. It is difficult to generalize from the research on mail survey premiums and accurately predict the potential impact of the premium in this study—for a review of the use of premiums as incentives, see Armstrong (1975) and Linsky (1975). Sample groups and premiums vary considerably across these mail surveys and each influences the generality of the findings. Even though Goodstadt, Chung, Kronitz, and Cook (1977) found that the use of a $.25 premium

increased response rates while a free-book premium did not, the decision was made to include the premium for several reasons. First, the purpose of the study, the sample, and the premium in Goodstadt, et al. (1977) were fundamentally different from this study's purpose, sample, and premium. Second, there was no evidence that the inclusion of a book premium would be detrimental to the study in any way (Goodstadt, et al., 1977)--so that the major risk was simply that the premium might not be successful in increasing the response rates. Third, each book was inscribed with a handwritten message on the front inside cover thanking the respondent for their time and signed by the researcher. This was an attempt to personalize the survey, and according to Dillman (1978), personalization is the fundamental vehicle for conveying the importance of the study as well as the importance of the respondent's participation. Fourth, a personal judgment was made that the book was attractive and unique and therefore might distinguish the survey to the respondents and increase the response rate.

The fourth paragraph had two related purposes. The first was to assure the respondents of confidentiality, and the second was to explain in a straightforward mannner the necessity for including an identification number on the questionnaire (Dillman, 1978). The identification number was displayed prominently on the first page of the upper right-hand corner of the questionnaire and used to check the respondent's name off the mailing list when the questionnaire was returned (Dillman, 1978).

The fifth paragraph called attention to the enclosed, self-addressed and stamped envelope included in the mailing packet.

Respondents also were instructed to write "copy of results requested" as well as their name and address on the back of the return envelope if they wanted a summary of the study. This technique simplifies administrative procedures; assures a current address of the respondent; and may also reinforce the assurance of confidentiality (Dillman, 1978).

The sixth paragraph communicated a willingness to answer any questions the respondent might have and included work and home telephone numbers that the respondent could call. This message was included to enhance the credibility of the study (Dillman, 1978). The last part of the paragraph stated that if the respondent preferred, he/she would be contacted to answer any questions—if they had not communicated with the researcher or returned the questionnaire. This was included to inform the respondents that telephone follow-ups would be used, and may even have served as an incentive to return the questionnaire quickly.

The last paragraph, as stated earlier, closed with thanking the respondent for their cooperation and reemphasized the source and altruistic appeal made in the initial paragraph. The letter closed with the researcher's name and title, i.e., Doctoral Candidate, as well as an indication of the enclosures in the mailing.

In summary, most of the recommendations by Dillman (1978) were followed in developing the cover letter. The length of the letter did exceed his recommended length of one page—the cover letter was printed on one and one-third pages. However, Dillman (1978) did state that length should be a secondary consideration and each part of the letter was judged necessary to the nature of the study.

Initial Mailing

The mailing packet consisted of the cover letter, the book premium, a self-addressed, stamped return envelop, and the questionnaire. These items were placed in a 9-1/2" by 6-1/2" gold-colored envelope. First-class postage was used to mail the packet and on the return envelope and totaled $1.72 per package. To further reinforce the source appeal, the return address on the mailing packet and the mailing address on return envelope (which was also an official University of Tennesseee, Department of Management envelope with the researcher's name stamped above the return address) were stamped with The University of Tennessee address. To personalize the survey, each letter was individually typed with the respondent's name and address. The respondent's address was printed on a white mailing label. Finally, a conspicuous blue and white "CONFIDENTIAL" mailing label was placed on each packet to increase the likelihood that the chief executive would personally receive the survey.

The questionnaire was reduced and then reproduced on 100 percent cotton content, 16-pound weight white paper. The paper measured 11 by 14 inches and was folded in the center to equal two pages measuring 8 1/2 by 11 inches. The measures were reproduced on each side of the two pages so that the total questionnaire length was four pages (see Appendix D-2). The order of the measures on the questionnaire was as follows: (1) the first page asked the number of full-time employees and contained the locus of control measure; (2) the second page contained the need for achievement measure; (3) the third page contained the entrepreneurial focus and resource support measures; and (4) the fourth

page included the corporate level entrepreneurship and centralization measure.

Number of full-time employees was chosen as the first question because it met several criteria set forth by Dillman (1978) in choosing the first question: it was clearly related to the survey topic (i.e., the importance of a representation of organization sizes was emphasized in the cover letter); was easy; conveyed a sense of neutrality; and was clearly applicable to everyone. The locus of control and need for achievement measures were the first two measures on the questionnaire for several reasons. First, both are relatively easy to fill out (Paulhus and Christie, 1981; Wortruba and Price, 1975). Second, the results of the pilot study indicated that the locus of control measure created the interest and motivation to complete the rest of the questionnaire as well as that it was easy to fill out. Third, including the trait measures first might reinforce and reduce the likelihood that the questionnaire was passed on to another individual in the organization. For example, if the measure on corporate level entrepreneurhsip was the first measure on the questionnaire, the chief executive might conclude that several other people in the organization could easily answer the questionnaire. Other individuals could not so easily comment on the personality traits of the chief executive.

The first group of 32 mailing packets was prepared and the letters were printed on May 19, 1985. At this time, it was discovered that the publishers of the book premium had sent the wrong book. A special shipment of the correct book was promised within a week. The original plan was to mail out the packets in groups in order to assess the

response rate. Due to this delay and in order to collect the data as expediently as possible, the decision was made to mail out all 120 packets when the correct book arrived. The original 32 letters were reprinted along with the other letters to reflect an accurate mailing date and these 120 letters were mailed on April 26, 1985.

Follow-up

The response rate to the mail survey was excellent. By the end of the first week, 27 questionnaires were returned, and the return pattern peaked in the latter part of the week tapering off by the end of the week. During the second week the number of responses again rose and peaked at midweek and also began to fall by the end of the week. A total of 47 questionnaires was returned by the end of the second week. Furthermore, 23 of the questionnaires included organizations with less than 500 employees and 24 of the responses were from firms with more than 500 employees indicating the needed range in organization size was represented.

The data collection could probably have been concluded at this point except that the cover letter to the respondents indicated that they would receive a follow-up telephone call if they had not returned the questionnaire in a week or so. Rather than change the design of the study, and because further increases in the response rate would result in corresponding increases in the power of the study, the follow-up telephone calls were made.

The telephone calls were placed on May 9-10, 1985. Three questions were asked during the follow-up calls: (1) did the chief executive

officer receive the questionnaire; (2) did they have any questions; and (3) would they return the questionnaire? In the majority of calls, this message was left with the secretary. Four of the organizations called had either gone out of business or changed corporate headquarters to another state, and two organizations were actually subsidiaries of the same parent company—and had been restructured into one division. This brought the actual number of organizations surveyed down to a total of 115.

Seventeen of the firms called had either changed chief executive officers or changed addresses. Eight of the chief executive officers contacted agreed to mail in the questionnaire. Only four of the respondents called refused to participate in the study. In those cases where the chief executive officers could not remember whether or not they had received the questionnaire, mention of the book premium was useful in helping them to recall the questionnaire. Five respondents had received the mail survey, but had lost or thrown away the questionnaire and agreed to complete another questionnaire. As a result of the telephone follow-up calls, nine mailing packets identical to the initial mailing packet were sent on May 10—with the exception that the sentence concerning a follow-up telephone call was ommitted. Five packets were sent with a revised cover letter (see Appendix D-3), the questionnaire, and a stamped, self-addressed return envelope.

Two other minor problems occurred during the data collection. One envelope was returned empty—so the respondent was sent another questionnaire, cover letter (see Appendix D-4), and return envelope. Two questionnaires were returned with missing data. There are a number

of ways to treat missing data in the analysis of the results (Cohen and Cohen, 1983). In this study, for example, it would have been possible to take an average of the items completed for a particular measure or substitute one of the two trait measures for entrepreneurial traits or substitute one or two of the situational measures for situational favorableness. However, one of the respondents had not filled out either trait measure and one had omitted the last two pages of the questionnaire which included the measures for all the situational favorableness measures as well as the dependent variable--corporate level entrepreneurship. Therefore, the questionnaires were returned to the respondent with a cover letter (see Appendix D-5 and D-6, respectively) and return envelope. All three of these questionnaires were subsequently returned and included in the analysis of the results.

The data collection period ended on June 14, 1985 and had covered a period of 7 weeks. By the last two weeks the rate of return had fallen to one a week. By the end of the period, a total of 74 questionnaires had been returned resulting in a response rate of 64 percent.

Summary

Beginning with the definition of the dependent variable, corporate level entrepreneurship was defined as the extent to which an organization's strategy is proactive and broadens the scope of activity into new business areas. While, need for achievement was defined as a personality trait dealing with one's achievement motivation to excel at moderately difficult tasks (McClelland, 1962), locus of control was also defined as a personality trait concerning one's beliefs about the extent

to which outcomes are under one's personal control (Rotter, 1966). Moreover, entrepreneurial traits was comprised of the combination of both traits.

Based on Miller's (1979) definition, centralization encompassed the responsibility for initiating and approving decisions. Resource support included both the extent of slack resources present and the use of rewards as managerial incentives. Entrepreneurial focus referred to the extent to which to which the ocrporate planning group seeks new, long-term growth opportunities. These three terms—centralization, resource, support, and entrepreneurial focus--comprised the situational favorableness for an organization. Organization size was defined as the number of employees and annual sales for an organization in 1985. In addition, chief executive, corporate planning group, and contingency model were defined.

The predicted variable in each hypothsis was corporate level entrepreneurship. Beginning with the entrepreneurial traits, a positive, linear and curvilinear relationship was postulated between the dependent variable and need for achievement and internal locus of control, respectively. A positive relationship between each of the situational favorableness variables—centralization, resource support, and entrepreneurial focus--with corporate level entrepreneurship was also hypothesized. To account for the possibility that entrepreneurial traits and situational favorableness might jointly influence the dependent variable, an interaction between these predictor variables was postulated. Finally, organization size was predicted to effect

corporate level entrepreneurship directly (a negative relationship) as well as indirectly via centralization.

Corporate level entrepreneurship was measured in the pilot study by an objective measure, i.e., number of SIC codes, as well as a subjective measure with the items based on a Likert scale format. A modified version of Hermans' (1970) scale and Paulhus and Christie's (1981) personal efficacy subscale were chosen to measure achievement motivation and locus of control, respectively. In order to measure centralization, resource support, and entrepreneurial focus, questionnaires were developed based on a Likert scale format. Organization size was ascertained from a questionnaire item as well as the Million Dollar Directory (1985).

Five chief executive officers in Knoxville, Tennessee participated in the pilot study. During an on-site interview, each respondent was questioned as to their general reactions, possible difficulties, and suggestions for improving the questionnaire. Based on their responses, the total number of items in the questionnaire was increased from 39 to 56 for the main study. Most of Hermans' (1970) original items were incorporated, and Miller and Friesen's (1982) centralization scale was substituted for the pilot study measure. Further increases in the total number of items were generally due to the simplification of some questions and the addition of other questions.

In selecting an appropriate sample group, several criteria were used including a power analysis and Miller's (1983) research. Based on a computer search, all Tennessee firms with over 400 employees were

surveyed and a random sample of Tennessee firms with below 400 employees was selected from the Million Dollar Directory (1984; 1985).

A mail survey was used for collecting the data. The cover letter incorporated the majority of Dillman's (1978) recommendations. Briefly, an altruistic appeal was made, and the source of the survey, i.e., the University of Tennessee, was emphasized. Why the firm and the chief executive's participation was important was also stressed. Confidentiality was assured and the chief excutives were informed that telephone follow-up calls would be made.

Included in the mailing packet were the cover letter, a book premium, a self-addressed, stamped envelope, and the questionnaire. First class postage was used and a "CONFIDENTIAL" mailing label was placed on each packet. The 120 packets were mailed on April 26, 1985.

As a result of the telephone follow-up calls, several additional packets were mailed. The data collection period ended on June 14, 1985 by which time 74 questionnaires had been returned, i.e., a response rate of 64 percent.

CHAPTER 4

ANALYSIS AND RESULTS

This chapter is organized into four major sections. First, the sample characteristics are discussed including a brief discussion of the psychometric properties of the measures. Second, the analysis and results of specific hypotheses and the treatment of missing data and multiple responses for a single item are discussed. Third, post hoc hypothesis testing--which was generated from the results and the intercorrelations among the variables in the study--and a general overview of the residual analysis are noted. The primary focus of the second and third sections was to determine which variables had a direct effect on corporate level entrepreneurship as well as to address the pattern of intercorrelations among the independent variables (e.g., the indirect effects of a given independent variable via another independent variable). Fourth, a summary of the analysis and results is presented, which contains a revised model of the major variables and the interrelationships among the variables in predicting corporate level entrepreneurship is presented.

Data Sample

The sample characteristics are shown in Table 4.1. The data sample consisted of 74 business firms which ranged in size from sales of $2 million to firms with over $1 billion in sales. The mean sales were $130 million with a standard deviation of $298 million. The firms varied in the number of employees from 8 to 52,000 average employees.

Table 4.1. Sample and Variable Descriptive Statistics: Means, Standard Deviations, Ranges, and Cronbach Alphas of Entire Sample in the Main Study of 74 Chief Executive Officers.

Variables	Mean	Standard Deviation	Range	Cronbach Alpha
Organization size				
Number of employees	2,120	6,663	8-52,000	N/A*
Sales ($MM)	130	298	2-1,770	N/A
Number of SIC codes	2.2	1.7	1-6	N/A
Scale values				
Formalization of planning	2.5	1.2	1-5	N/A
Need for achievement	62.6	4.2	55-71	.70
Locus of control	55.0	5.7	43-66	.54
Centralization	68.2	9.9	34-84	.83
Approval	37.6	3.7	24-42	.65
Initiation	30.6	7.3	10-42	.81
Resource support	15.8	2.5	9-21	.30
Entrepreneurial focus	25.6	3.1	18-34	.45
Corporate level entrepreneurship	15.2	2.8	7-21	.57

*Not Applicable

The average number of employees in the data sample was 2,120 with a standard deviation of 6,663. The mean response for formalization of planning was 2.5 and the respondents utilized the entire range of the questionnaire item from 1-5. Based on a tally of the individual responses to this item, the majority--72%--disagreed that most of the strategic planning was accomplished in a formal, annual planning session, 4 percent were undecided, and 24 percent agreed with the item.

The firms in the sample group represented seven broad areas. The largest group was comprised of manufacturers (37%). There were also firms in finance, insurance, and real estate (16%), wholesale (15%), construction (12%), retail (9%), transportation, communications, and utilities (6%), and services (4%). No major SIC industry group represented more than 4 percent of the sample (see Appendix E-1). Of the total sample group of 74 firms, 17 firms were subsidiaries of a parent company and these firms did not differ in the degree of corporate level entrepreneurship from the other firms which were not subsidiaries.

The means, standard deviations, and ranges for each variable and the Cronbach alphas for the measures are presented in Table 4.1. In comparison to the other measurement scales in the study, the measures for need for achievement (Hermans, 1970), locus of control (Paulhus and Christie, 1981), and centralization (Miller and Friesen, 1982) had relatively high Cronbach alphas and were within the guidelines recommended by Van de Ven and Ferry (1980). These measures also had larger standard deviations than the other measures. Because some of the post hoc hypothesis testing will treat them separately, the centralization measure was divided into the parts which dealt with the

approval and initiation of decisions with the corresponding means, standard deviations, ranges, and Cronbach alphas . The measures developed specifically for this study--resource support, entrepreneurial focus, and corporate level entrepreneurship--generally had lower internal consistency estimates (with the exception of corporate level entrepreneurship) and standard deviations. This points to the need for improving the psychometric properties of the measures in future research and will be discussed in Chapter 5 as a limitation of the study.

The product-moment correlations of the variables are given in Table 4.2. The first variable--entrepreneurial traits--is the sum of need for achievement, need for achievement squared, locus of control, and locus of control squared, i.e., Variables 2, 3, 4, and 5. Similarly, situational favorableness, the sixth variable, is the sum of centralization, resource support, and entrepreneurial focus, i.e., Variables 7, 10, and 11. Centralization is further divided into its two components--approval and initiation of decisions, i.e., Variables 8 and 9. The intercorrelations among the specific variables are discussed in the next two sections of this chapter dealing with hypothesis testing and post hoc analysis. In fact, many of the propositions generated in the post hoc analysis originated from the pattern of results in Table 4.2. The semipartial correlations computed in both of these sections are compared to the product-moment correlations for a given variable.

Hypothesis Tests

This section includes the statistical analysis of each hypothesis and a discussion of the results of the analysis. The full, multiple

Table 4.2. Product-Moment Correlations of Variables in the Study.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Entrepreneurial traits	1.00	.85***	.85***	.89***	.90***	-.16	-.24**	-.04	-.30***	-.10	.37***	.84***	-.07	-.05	-.10
2. Need for ach		1.00	1.00***	.52***	.53***	-.21*	-.28***	-.09	-.34***	-.07	.34***	.67***	.03	-.01	-.04
3. Need for ach squared			1.00	.52***	.53***	-.22*	-.29***	-.09	-.34***	-.07	.34***	.66***	.03	-.01	-.05
4. Locus of control				1.00	1.00***	-.09	-.15	.00	-.20*	-.11	.31***	.79***	-.13	-.06	-.11
5. Locus of control squared					1.00	-.08	-.14	.01	-.20*	-.11	.31***	.79***	-.13	-.06	-.11
6. Situational favorableness						1.00	.90***	.76***	.84***	.16	-.05	.39***	-.08	-.16	-.29***
7. Centralization							1.00	.79***	.95***	-.16	-.39***	.27**	-.06	-.34***	-.20*
8. Approval								1.00	.56***	-.12	-.20*	.38***	.04	-.20*	-.14
9. Initiation									1.00	-.15	-.43***	.17	-.10	-.36***	-.20*
10. Resource support										1.00	.15	.00	.02	.11	-.05
11. Entrepreneurial focus											1.00	.31***	-.07	.53***	-.19*
12. Entrepreneurial traits x situational favorableness												1.00	-.11	-.12	-.24**
13. Organization size													1.00	.10	.25**
14. Corporate level entrepreneurship—CLE_1														1.00	-.11
15. Number of SIC codes—CLE_2															1.00

*Significant at $p \leq .10$.

**Significant at $p \leq .05$.

***Significant at $p \leq .01$.

regression model is first tested for significance. In those cases where the full model R^2 was not significant, the specific variables in the regression model were shown in a footnote to the table. If the full model yielded a significant multiple R^2 (at $p \leq .10$), the relevant variables within that model were analyzed in a second table. The simultaneous regression coefficients, t tests, semipartial and simple correlation coefficients, as well as the significance levels were reported. The simultaneous regression coefficients, t tests, and semipartial correlations indicate each independent variable's direct and unique contribution to the variance in the dependent variable, i.e., beyond that accounted for by the other independent variables in a given regression model.

The regression coefficients in the tables which follow--B_{yx}-- are the simultaneous regression coefficients for the raw data. The standardized regression coefficients were not reported because the t values and semipartial correlations, which are standardized coefficients, were available to facilitate comparisons between the variables in a given model. The semipartial and simple correlation coefficients in the tables, sr_{yx} and r_{yx}, respectively, are referenced in the discussion as sr and r, respectively, for convenience.

This section is organized by hypotheses--Hypotheses H1A, H1B, H1C, and H1D; H2A, H2B, and H2C; and H3, and H4 and H5 are combined into one subsection. The testing of Hypotheses H1, H2, H4, and H5 was relatively straightforward. However, in Hypothesis H3, many of the predictors that were not significant (i.e., $p \leq .10$) in Hypotheses H1 and H2 became significant as terms were added to the regression model. Therefore, the

analysis and results in Hypothesis H3 are more evolutionary with an eye toward developing the "best" regression model. The section is organized by the treatment of variables for which specific predictions were made in Hypothesis H3 as well as the treatment of variables which became significant when another independent variable was added to a given regression model. The analysis is presented first for corporate level entrepreneurship defined as the subjective measure (CLE_1) located in Appendix B-1, and second for corporate level entrepreneurship defined as the number of SIC codes listed for each firm (CLE_2) for Hypotheses H1 and H2, after which CLE_2 is treated as a predictor of CLE_1 in the post hoc analysis.

Before discussing the hypothesis tests, the treatment of missing data and multiple responses for a single item will be elaborated. Fortunately, none of the respondents omitted an entire measure of a given variable. Omissions generally concerned missing data for one or two items of a particular measure. There were no omissions on the measures of corporate level entrepreneurship and locus of control. In the need for achievement scale (see Appendix B-2) Items 5 and 7 were omitted once, Item 6 twice, and six respondents omitted Item 10. The measures of centralization (see Appendix B-3) included 2 omissions on Item 3 and 1 omission on Item 5 concerning responsibility for approving decisions and for initiating decisions, there were 2 omissions on Items 1, 2, and 5, 4 omissions on Item 3, and 1 omission on Items 4 and 6. There were only 2 omissions on Item 1 of the resource support measure (see Appendix B-4). And, finally, Items 5 and 7 were omitted once on the entrepreneurial focus measure (see Appendix B-5).

Since there were no missing values on the dependent variables, none of the respondents were dropped from the analysis. Further, because the proportion of missing data across all the independent variables was very low (<1%), the mean of the values present for an item was plugged as a conservative estimate for the missing value.

Some of the respondents checked more than one answer for a given item. In these cases, the average of the responses for an item was substituted as the value for that item. Specifically, on the need for achievement measure, two averages were computed on Question 10 (see Appendix B-2). An average value was also computed once for Items 3 and 5 on the resource support scale (see Appendix B-4) and Items 2 and 5 on the corporate level entrepreneurship scale (see Appendix B-1). On the centralization scale concerning approval of decisions, 2 averages were coded for Items 1 and 2, 1 for Item 3, 3 for Item 4, 2 for Item 5, and 3 for Item 6; and on the initiation of decisions, 1 average was computed for Items 1, 2, 3, 4, and 5, and 2 averages for Item 6.

Hypotheses H1A, H1B, H1C, and H1D

Cohen and Cohen (1983) discuss the appropriate analysis to test for linear and curvilinear effects. Specifically, the linear component of a given variable is entered into a regression model first, and the test of significance is the increment in R^2 due to the addition of the variable in the regression model. Then the quadratic component for the variable is entered into the regression model and the increase in R^2 is tested for significance.

The results of the full regression models including all four of the entrepreneurial traits in H1 were not significant. Since the F values for the full model were not significant with either CLE_1 or CLE_2 (see Tables 4.3 and 4.4, respectively), it was not necessary to perform the hierarchical analysis. Hypotheses H1A, H1B, H1C, and H1D were not supported and the entrepreneurial traits--need for achievement (Nach), locus of control (Loc), and the squared term (i.e., $Nach^2$ and Loc^2, respectively) for each--are not significant predictors of corporate level entrepreneurship when taken alone, i.e., there is no main effect for these variables.

Hypotheses H2A, H2B, and H2C

The full regression model for the hypotheses in H2 with CLE_1 was significant at the $p \leq .0001$ level and yielded a multiple R^2 of .30 (see Table 4.5) and the regression coefficients, t tests, semipartial and simple correlation coefficients along with the significance levels are given in Table 4.6. Hypothesis H2A, which predicted that centralization would add a unique, positive contribution to the variance in CLE_1, was not supported. The semipartial correlation (-.14) was only significant at the $p \leq .1622$ level. The simple correlation between centralization and CLE_1 was significant ($r=-.34$ at $p \leq .01$; see Table 4.2, p. 91), but in the opposite direction predicted in H2A. Typically, semipartial correlations will sum to less than R^2 when the independent variables are correlated (Cohen and Cohen, 1983). In this case, the semipartial correlation is the correlation between centralization and that portion

Table 4.3. Results of the Full Regression Model for Hypotheses H1A, H1B, H1C, and H1D with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p
Model	4	5.51	1.38	.17[b]	.95
Error	69	570.55	8.27		
Total	73	576.05[a]			

[a]Discrepancy due to rounding.

[b]Model tested was $CLE_1 = B_o + B_1Nach + B_2Nach^2 + B_3Loc + B_4Loc^2$.

Table 4.4. Results of the Full Regression Model for Hypotheses H1A, H1B, H1C, and H1D with Corporate Level Entrepreneurship (CLE_2).

Source	DF	SS	MS	F	p
Model	4	7.72	1.93	.69[b]	.60
Error	69	193.63	2.81		
Total	73	201.35			

[b]Model tested was $CLE_2 = B_o + B_1Nach + B_2Nach^2 + B_3Loc + B_4Loc^2$.

Table 4.5. Results of the Full Regression Model for Hypotheses H2A, H2B, and H2C with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	3	174.76	58.25	10.16	.0001	.30
Error	70	401.29	5.73			
Total	73	576.05				

Table 4.6. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Hypotheses H2A, H2B, and H2C with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
Centralization	-.04	-1.41	-.14	.1622	-.34***
Resource support	.02	.18	.02	.8543	.11
Entrepreneurial focus	.43	4.31	.43	.0001	.53***

***Significant at $p \leq .01$.

of CLE_1 that is uncorrelated with the other independent variables and CLE_1.

Since centralization is negatively correlated with entrepreneurial focus (r=-.39 at $p \leq .01$; see Table 4.2, p. 91), but is not significantly correlated with resource support (r=-.16; see Table 4.2, p. 91), the redundancy between centralization and entrepreneurial focus is responsible for the low semipartial correlation. In other words, centralization and entrepreneurial focus jointly predict variance in CLE_1. A plausible explanation for this overlap is that when an organization decentralizes, the initiatives for decisions are at lower levels within the organization which involve more individuals. When more individuals are involved in the decision process, the number of alternative courses of action and new growth opportunities automatically increases. This argument actually incorporates a third variable explanation--that involving more individuals in the planning process is associated with a more decentralized organizational structure and a higher entrepreneurial focus.

Hypothesis H2B was not supported using CLE_1 as the dependent variable. Neither the simple correlation nor the semipartial correlation was significant between resource support and CLE_1 (r=.11 and sr=.02, respectively; see Table 4.6); the latter indicating that resource support did not contribute independently to any of the variance in CLE_1.

Hypothesis H2C, which predicts a unique, positive relationship between entrepreneurial focus and CLE_1 was supported. The semipartial correlation, .43, was highly significant at the $p \leq .0001$ level (see Table

4.6). Thus, entrepreneurial focus accounted uniquely for .18 of the variance in CLE_1.

The full regression model with Hypotheses H2A, H2B, and H2C with CLE_2 was also significant. The F value of 3.46 in Table 4.7 was significant at $p \leq .02$ with a multiple R^2 of .13. The results of the semipartial and simple correlation coefficients exhibited a different pattern than those in Hypotheses H2A, H2B, and H2C with CLE_1 (see Table 4.8). First, the semipartial correlations for centralization and entrepreneurial focus are larger than the simple correlations. Second, whereas the semipartial correlation between entrepreneurial focus and CLE_1 was significant in the predicted direction (sr=.43 at $p \leq .0001$; see Table 4.6), the direction changed to a significant, negative relationship with CLE_2 (sr=-.29 at $p \leq .01$; see Table 4.8). Third, the semipartial correlation for centralization and CLE_2 was significant (sr=-.31 at $p \leq .01$; see Table 4.8), but not in the direction that was predicted in Hypothesis H2A.

The sum of the squared semipartial correlations for centralization and entrepreneurial focus with CLE_2 (sr^2=.09 + .08; see Table 4.8), is greater than the multiple R^2 for the full model (R^2=.13; see Table 4.7). This indicates that the correlation (r=-.39; $p \leq .01$) between the independent variables--centralization and entrepreneurial focus--in Table 4.2 (p. 91) is not necessarily that the variables are partially redundant in what each is predicting, but that suppression is operating between the two variables. Cohen and Cohen (1983) describe suppression as the condition where the relationship between the independent variables is suppressing (i.e., hiding) their true relationships with

Table 4.7. Results of the Full Regression Model for Hypotheses H2A, H2B, and H2C with Corporate Level Entrepreneurship (CLE_2).

Source	DF	SS	MS	F	p	R^2
Model	3	25.97	8.66	3.46	.02	.13
Error	70	175.38	2.51			
Total	73	201.35				

Table 4.8. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Hypotheses H2A, H2B, and H2C with Corporate Level Entrepreneurship (CLE_2).

Source	B_{yx}	t	sr_{yx}	sr_{yx}^2	p	r_{yx}
Centralization	-.06	-2.72	-.31	.09	.01	-.20*
Resource support	-.03	-.46	-.05	.00	.64	-.05
Entrepreneurial focus	-.17	-2.57	-.29	.08	.01	-.19*

*Significant at $p \leq .10$.

the dependent variable, which in this case, is larger than the product-moment correlations would indicate.

A possible explanation as to why centralization and entrepreneurial focus are negatively related can be illustrated by examining the highest level of centralization--where the chief executive officer retains all the authority to initiate and approve strategic decisions versus a case where this authority is delegated to a larger number of individuals. In the latter case, delegation would make it possible to draw upon a greater number of viewpoints and a wider range of knowledge. This rationale is similar to Thompson's (1969) view that a high degree of centralization prevents imaginative problem solutions. If decentralization results in an increase in the number of individuals who participate in the strategic decisions, e.g., to product division managers with the relevant knowledge of their particular products, markets, and/or services, this may lead to a corresponding increase in the number of long-term possibilities that are initiated and considered, i.e., a high entrepreneurial focus. There is also the possibility that the relationship between centralization and entrepreneurial focus is a reciprocal one. Entrepreneurial focus may influence the degree of centralization in that if an organization is seeking a number of long-term opportunities, more individuals with broad and diverse backgrounds and perspectives may be sought to input into the strategic decision making, i.e., decentralization.

A plausible explanation for the shift in the direction of the semipartial correlations between entrepreneurial focus and CLE_1 and entrepreneurial focus and CLE_2 is in Miller and Friesen's (1982) concept

of strategic momentum. Miller and Friesen (1982) postulated that momentum, defined as an organization's "past practices, trends and strategies," (p. 2) is a force which operates to keep an organization developing in the same direction. This momentum results in extremes--conservative firms become very conservative and entrepreneurial firms become very innovative--so that the relationship between the determinants of innovation and innovation varies depending on whether the organization is conservative or entrepreneurial. Two of the decision making variables--analysis of information and futurity of the planning horizon--were similar conceptually to the entrepreneurial focus of the corporate planning group. In Miller and Friesen's (1982) study, there was a significant, positive relationship ($r=.41$; $p\leq.01$) between futurity of planning and innovation for conservative firms and a significant, negative relationship ($r=-.47$; $p\leq.01$) in entrepreneurial firms. The relationship between analysis and innovation in conservative firms was positive ($r=.13$), but not significant at the $p\leq.10$ level, and for entrepreneurial firms, the same relationship was in a significant, negative direction ($r=-.39$; $p\leq.05$).

On the one hand, CLE_1, the subjective measure of corporate level entrepreneurship (see Appendix B-1), referred to the organization's present strategy, and entrepreneurial focus referred to the climate which existed in the strategic planning group when the most recent strategic plans were developed (see directions in Appendix B-5). On the other hand, CLE_2, the number of SIC codes, more likely dates back to previous strategies since the number was taken from the Million Dollar Directory (1985). In other words, there would be a time lag between the

time an organization reported the SIC codes and the time this information was subsequently published. For example, 18 percent of the firms in the original sample of 128 had either gone out of business, moved, merged, or changed chief executive officers and/or addressses. The product moment correlation between CLE_1 and CLE_2 is not significant (r=-.11; see Table 4.2, p. 91), therefore the two measures appear to be tapping different constructs.

If this assumption is correct--that CLE_2, the number of SIC codes, reflects an earlier time period than CLE_1 and entrepreneurial focus--then historical forces or momentum could explain the negative relationship between entrepreneurial focus and CLE_2 (the positive relationship between entrepreneurial focus and CLE_1 was as predicted in Hypothesis H2C). The more entrepreneurial a firm has been in the past (i.e., high CLE_2), the more likely it is that the firm is facing problems concerning the excesses of innovation rather than the problems of stagnation--so short-term organizational efficiency may be a relevant concern (i.e., low entrepreneurial focus). This pattern of results is also consistent with stages of organizational growth models (e.g., Galbraith and Nathanson, 1978). For example, if an organization has diversified (e.g., high CLE_2), this strategic shift would be accompanied by a corresponding need to restructure the organization. This concentration on designing the structure to fit the strategy would be reflected in a low level of entrepreneurial focus. The need to develop new markets, products, and/or services (i.e., a high entrepreneurial focus) will be more important to the conservative firm (i.e., low CLE_2) which is more likely to be facing the issue of stagnation.

Moreover, referencing CLE_2 as an index of past strategy (i.e., past corporate level entrepreneurship) and CLE_1, along with the other independent variables, as referencing a more recent time frame suggests that CLE_2 may be more appropriately considered a predictor of the other variables in the study than a value to be predicted. On the one hand, the pattern of simple correlations in Table 4.2 (p. 91) between CLE_1 and CLE_2 with the other variables was similar and in the same direction (with the exception of entrepreneurial focus). A similar pattern was evident in testing the hypotheses in the preceding discussions indicating the possibility that the relationship between the predictors and dependent variables was not simply a function of common method variance. On the other hand, CLE_1 and CLE_2 were not significantly correlated ($r=-.11$; see Table 4.2, p. 91). That the dependent variables were not correlated, but CLE_2 was correlated with other predictor variables, suggests that CLE_2 may have an indirect effect on CLE_1, i.e., a causal path that past strategy (CLE_2) may influence the situational favorableness predictors which in turn may influence the present strategic direction of the firm (CLE_1). Therefore, in the analysis which follows, CLE_2 will not be analyzed as a dependent variable, but as a predictor of CLE_1 in the post hoc analysis.

The semipartial correlation between centralization and CLE_2 was highly significant ($sr=-.31$ at $p\leq.01$; see Table 4.8) but not in the direction predicted in Hypothesis H2A. The position that there is a positive relationship between centralization and entrepreneurship (Mintzberg, 1973; Normann, 1971) is the most strongly supported view (Rogers and Shoemaker, 1971). However, the results of the data in this

study support the position that this relationship is negative, i.e., Thompson (1969) and Hage and Aiken (1970) have argued that decentralization is important for innovation to occur because centralized power structures stifle creative problem solving. High CLE_2, by definition, also implies diversity in products, markets, and/or services, and the more diverse the organization is, the more difficult it would be for one individual to possess the expertise and knowledge necessary to formulate the strategic direction in each area. So Burgelman's (1983) view that the initiatives for entrepreneurship in large, complex organizations occur at levels below the chief executive is supported.

Resource support was not significantly related to CLE_2 (sr=-.05; see Table 4.8) and Hypothesis H2B was, therefore, not supported with either CLE_1 or CLE_2. In fact, resource support did not correlate significantly with any variable in the study (see Table 4.2, p. 91).

Hypothesis H3

Hypothesis H3 predicted a significant interaction between entrepreneurial traits and situational favorableness over and above the main effects for each of these variables. In the analysis which follows, the term "entrepreneurial traits" is defined as the additive score (unit weights) of need for achievement, need for achievement squared, locus of control, and locus of control squared. Hypothesis H3 was analyzed two different ways. The first regression model defines "situational favorableness" as the sum of all three situational predictors--centralization, resource support, and entrepreneurial focus.

A second group of regression models treats each of the situational variables separately and tests the interaction of a given situational predictor and entrepreneurial traits. In this phase of the analysis, as different terms were added to the regression model, the main effects which were not significant in Hypotheses H1 and H2 with CLE_1 (i.e., entrepreneurial traits, centralization, and resource support) became significant. Whenever this occurred, subsequent analysis and/or plausible explanations were explored. Following the analysis of each interaction term, the full regression model with all significant predictors was given and compared to the same model except that the term entrepreneurial traits was defined simply as the sum of the need for achievement and locus of control scales, i.e., minus the power terms for each.

Entrepreneurial traits x situational favorableness interaction. The multiple R^2 for the full regression model using entrepreneurial traits (ET), situational favorableness (SF), and the interaction of both (ETxSF) with CLE_1 was not significant (see Table 4.9). Hypothesis H3 was not supported using the composite measure of situational favorableness. However, because several of the independent variables were intercorrelated (see Table 4.2, p. 91), the composite measure of situational favorableness could well be masking significant interactions between a particular situational predictor and entrepreneurial traits.

Therefore, the interaction of each situational variable, i.e., centralization (Cent), resource support (RS), and entrepreneurial focus (EF) with entrepreneurial traits (ET) was tested--ETxCent, ETxRS, and

Table 4.9. Results of the Full Regression Model for Hypothesis H3 of Entrepreneurial Traits, Situational Favorableness, and the Interaction Term with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	3	18.81	6.27	.79[b]	.51	.03
Error	70	557.25	7.96			
Total	73	576.05[a]				

[a]Discrepancy due to rounding.

[b]Model tested was $_2CLE_1 = B_o + B_1ET + B_2SF + B_3ETxSF$, where $ET = Nach + Nach^2 + Loc + {}^oLoc^{21}$ and $SF^2 = Cent^3 + RS + EF$.

ETxEF, respectively. Because each interaction term was, in general, expected to be correlated with the main effects which make up the interaction term, the appropriate statistical procedure was hierarchical analysis whereby the contribution to R^2 by each interaction is assessed only after the main effects were entered into the model (Cohen and Cohen, 1983). The full regression model for the main effects was significant yielding an R^2 of .38 at $p \leq .0001$ (see Table 4.10) and the corresponding regression coefficients, t tests, and semipartial and simple correlation coefficients are shown in Table 4.11.

Entrepreneurial traits. The results shown in Table 4.11 were unexpected in that the semipartial correlation between entrepreneurial traits and corporate level entrepreneurship was -.28 and highly significant at the $p \leq .005$ level. Before testing the significance of the interaction terms, the reason for this jump from a simple correlation of -.05, not significant at $p \leq .10$, to the larger semipartial correlation was investigated. To determine which of the situational variables resulted in this shift, regression models were computed entering entrepreneurial traits and each of the situational variables separately. Tables 4.12 and 4.13 show the results of the model including entrepreneurial traits and centralization; Table 4.14 gives the regression results of entrepreneurial traits and resource support; and Tables 4.15 and 4.16 present the model including entrepreneurial traits and entrepreneurial focus.

Although centralization and entrepreneurial traits are correlated together with a simple correlation of -.24, $p \leq .05$ (see Table 4.2, p.

Table 4.10. Results of the Full Regression Model for Hypothesis H3 of Entrepreneurial Traits, Centralization, Resource Support, and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	4	219.16	54.79	10.59	.0001	.38
Error	69	356.89	5.17			
Total	73	201.35				

Table 4.11. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Hypothesis 3 of Entrepreneurial Traits, Centralization, Resource Support and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
ET	-.001	-2.93	-.28	.0046	-.05
Cent	-.055	-1.86	-.17	.0667	-.34***
RS	-.038	- .35	-.03	.7299	.11
EF	.525	5.24	.50	.0001	.53***

***Significant at $p \leq .01$.

Table 4.12. Results of the Full Regression Model for Entrepreneurial Traits and Centralization with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	2	76.42	38.21	5.43	.006	.13
Error	71	499.63	7.04			
Total	73	576.05				

Table 4.13. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Traits and Centralization with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
ET	-.0004	-1.19	-.13	.2392	-.05
Cent	-.1059	-3.27	-.36	.0017	-.34***

***Significant at $p \leq .01$.

Table 4.14. Results of the Full Regression Model for Entrepreneurial Traits and Resource Support with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	2	7.89	3.95	.49[b]	.61	.01
Error	71	568.16	8.00			
Total	73	576.05				

[b]Model tested was $CLE_1 = B_o + B_1ET + B_2RS$

Table 4.15. Results of the Full Regression Model for Entrepreneurial Traits and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	2	201.16	100.58	19.05	.0001	.35
Error	71	374.90	5.28			
Total	73	576.05[a]				

[a]Discrepancy due to rounding.

Table 4.16. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Traits and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	sr_{yx}^2	p	r_{yx}
ET	-.0008	-2.70	-.26	.07	.0086	-.05
EF	.5811	6.15	.59	.35	.0001	.53***

***Significant at $p \leq .01$.

91), the semipartial correlations with these two variables in a regression equation increase only slightly. The semipartial correlation in Table 4.13 between ET and CLE_1 is not significant (sr=-.13, $p \leq .24$). The R^2 in the regression model including entrepreneurial traits and resource support as predictors was not significant (see Table 4.14). The situational variable which, when added to the regression model, results in the correlation between entrepreneurial traits and corporate level entrepreneurship becoming significantly stronger is entrepreneurial focus. In Table 4.16, the semipartial correlation between ET and CLE_1 is -.26, $p \leq .01$.

That the semipartial correlation between ET and CLE_1 is greater than the simple correlation (and the semipartial correlation between EF and CLE_1 also increases slightly) indicates a suppressor relationship. Since suppression occurs in several of the regression models which follow, a model is presented in Figure 4.1 which illustrates the interrelationships among CLE_1, ET, and EF.

Total variation in each variable in Figure 4.1 is represented by each circle labeled CLE_1, ET, and EF. The total portion of CLE_1 variance which is predictable from ET is represented by the overlap of the two circles, i.e., areas A and B. Similarly, the total portion of CLE_1 variance which is predictable from EF is the overlapping area of B and C. ET and EF uniquely account for variance in CLE_1 represented by areas A and C, respectively. While the intercorrelation between ET and EF is represented by areas B and D, area B represents variance which is associated with common variance among all three variables. Thus, area B is redundant from the standpoint that it is predicted by both ET and EF.

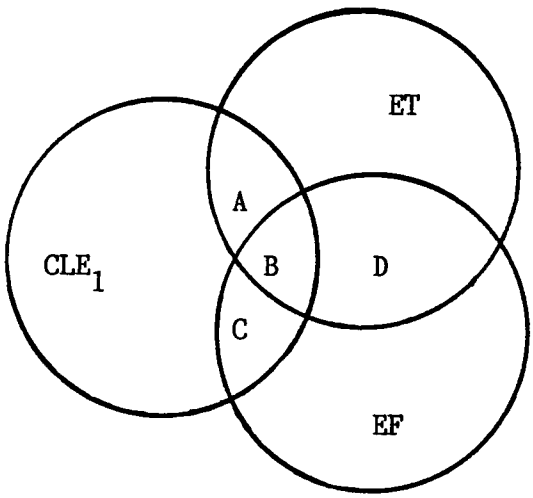


Figure 4.1. Venn Diagram of Corporate Level Entrepreneurship, Entrepreneurial Traits, and Entrepreneurial Focus.

In a multiple regression model, the regression coefficients reflect a particular variable's unique contribution to the dependent variable, e.g., areas A and C in Figure 4.1. Wiggins (1973) illustrates a situation where the semipartial coefficient is greater that the corresponding simple correlation coefficient by examining the following formula for the regression weight b_1 assuming there are two predictors in the full model:

$$b_1 = \left(\frac{r_{x_1 y} - r_{x_2 y} r_{x_1 x_2}}{1 - r^2_{x_1 x_2}} \right) \frac{\sigma_y}{\sigma_x}$$

The term in parentheses is the semipartial correlation term which is based partly on the simple correlation between the predictor and a given dependent variable, i.e., $r_{x_1 y}$. From the simple correlation is subtracted $r_{x_2 y} r_{x_1 x_2}$ which is the portion of variance in the dependent variable which is mutually predicted from the two independent variables. The denominator term, $r^2_{x_1 x_2}$ is the intercorrelation between the two predictors. Increases in the amount of variance jointly and redundantly predicted by two predictors (ceteris parabis) will result in a lower semipartial correlation. Therefore, the semipartial correlation will be increased when there is an increase in the intercorrelation between the predictors that is not correlated with the dependent variable (i.e., area D in Figure 3). The effect of a suppressor relationship then, by removing the variance in a given predictor which is irrelevant to the prediction of the dependent variable, increases the predictive power of that independent variable.

Figure 4.2 depicts a proposed model of the relationships among

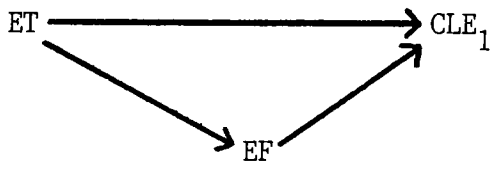


Figure 4.2. Model of Entrepreneurial Traits, Entrepreneurial Focus, and Corporate Level Entrepreneurship.

these three variables. The arrows in Figure 4.2 are drawn in directions to suggest the following explanation. The primary mechanism whereby a chief executive officer who is high on ET affects CLE_1 in a positive direction is indirect via the chief executive officer's effect on EF. The simple correlation between these two variables is .37 at $p \leq .01$ (see Table 4.2, p. 91). A chief executive officer who is high on ET is more likely to search the external environment for new long-term growth opportunities which results in a higher degree of CLE_1. In other words, the chief executive who is high on ET will not be as concerned with short-term efficiency as with optimizing long-term growth. Further, this may be the most effective way in which the chief executive influences CLE_1 because entrepreneurial focus consistently shows the strongest relationship to CLE_1 compared to the other variables in this study.

After controlling for this relationship between ET and EF, there is actually a direct negative relationship between ET and CLE_1 which was not expected and generally inconsistent with the prevailing research--

both theoretical and empirical--on CLE_1. This may illustrate the chief executive who is high on ET, but seeks to affect the strategic direction of the firm directly without influencing the EF of the corporate planning group. Without the investigation of long-term growth opportunities (high EF), the strategic possibilities as well as the strategy may be necessarily constrained (low CLE_1). Explaining the reverse of this relationship, i.e., why a low degree of ET is associated with high CLE_1 is more problematic. One possibility is that the chief executive officer in this situation resembles an administrator, and the expertise and responsibility for innovation is located at lower levels in the organization. If this were the case, the interaction between CLE_1 and ET with centralization would be significant, i.e., low ET and high CLE_1 would be associated with a decentralized (low Cent) structure. Although the full model testing this hypothesis was significant, the interaction term was not significant (see Tables 4.17 and 4.18, respectively).

Without considering the potential for other "third variable" explanations, it may be possible that the chief executives with low ET innovate as a defensive solution to the way they perceive how their environment operates. For example, high external chief executives, who believe that outcomes are not under their control, and low need for achievement executives, who prefer not moderately, but extremely challenging situations, may innovate in the hope that they will be "lucky" in an otherwise uncontrollable environment. At any rate, the direct negative effect of ET on CLE_1 is far exceeded by the indirect path from ET to EF to CLE_1. The variance in CLE_1 explained by EF is

Table 4.17. Results of the Full Regression Model for Entrepreneurial Traits, Corporate Level Entrepreneurship (CLE_1), and the Interaction with Centralization.

Source	DF	SS	MS	F	p	R^2
Model	3	1,281.49	427.16	5.13	.003	.18
Error	70	5,829.69	83.28			
Total	73	7,111.19[a]				

[a]Discrepancy due to rounding.

Table 4.18. Regression Coefficients and t Tests of Entrepreneurial Traits, Corporate Level Entrepreneurship (CLE_1), and the Interaction with Centralization.

Source	B_{yx}	t	p
ET	- .003	-.54	.59
CLE_1	-1.605	-.56	.58
$ETxCLE_1$	5.091	.13	.90

five times that explained by the direct effect of ET; the semipartial correlations squared in Table 4.16 are .07 and .35 for ET and EF, respectively.

Centralization. In the regression model shown in Table 4.11, centralization also became a significant predictor of CLE_1 (sr=-.17 at $p \leq .10$; p. 107). Since centralization was not significant in the regression model shown in Table 4.6, the addition of the term entrepreneurial traits to the model was responsible for the change. Entrepreneurial traits and centralization are significantly correlated (r=-.24 at $p \leq .05$; see Table 4.2, p. 91). Furthermore, this interrelationship is due predominantly to the correlation between need for achievement and centralization (r=-.28 at $p \leq .01$; see Table 4.2, p. 91) since the correlation between locus of control and centralization is not significant (r=-.15; see Table 4.2, p. 91).

The rationale proposed for this relationship between entrepreneurial traits, centralization, and CLE_1 is similar to that proposed in the previous section between entrepreneurial traits, entrepreneurial focus, and CLE_1. Figure 4.3 presents a model of the

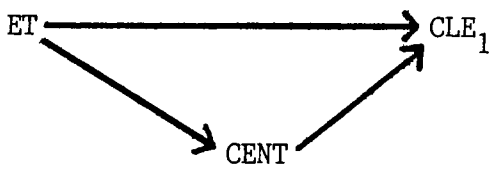


Figure 4.3. Model of Entrepreneurial Traits, Centralization, and Corporate Level Entrepreneurship.

interrelationship among these variables. The focal point of Figure 4.3 is that entrepreneurial traits (ET) again affect CLE_1 via an indirect path by influencing the level of centralization which in turn influences CLE_1. A primary mechanism by which an entrepreneurial chief executive (high ET) influences the organizational structure is by decentralizing decision making responsibility. Furthermore, decentralizing the responsibility for the initiation of decisions, and not the approval of decisions, is the basis for this relationship. Need for achievement and locus of control are significantly correlated with the initiation of decisions ($r=-.34$ at $p\leq.01$ and $r=-.20$ at $p\leq.10$, respectively; see Table 4.2, p. 91), but not the approval of decisions ($r=-.09$ and $r=.00$, respectively; see Table 4.2, p. 91).

After controlling for this interrelationship, there is a negative relationship between centralization and CLE_1. As noted previously, this negative relationship is supported by Thompson (1969) and Hage and Aiken's (1970) position that centralized power structures may stifle creative problem solving. Similarly, Burgelman (1983) maintained that the initiatives for entrepreneurship in large, complex organizations originate at levels below the chief executive officer.

Entrepreneurial traits x centralization interaction. The first interaction term in H3 which was tested was between entrepreneurial traits and centralization. The regression coefficient, t test, or the semipartial correlation for the interaction--ETxCent--will appropriately reflect a test of the significance of the interaction since the effects of the other predictors have been partialled. The full model was

significant (R^2=.38 at $p \leq .0001$), but the regression coefficient was not significant (see Tables 4.19 and 4.20, respectively).

A feasible explanation for not finding a significant interaction between entrepreneurial traits and centralization may be due to the interrelationship and causal linkage between the variables. Based on the results shown in Table 4.11 (p. 109) and the preceding discussion of Figure 4.3, it appears that a model which proposes entrepreneurial traits (i.e., the chief executive) influence the degree of centralization is supported and a model hypothesizing that centralization moderates the relationship between entrepreneurial traits and corporate level entrepreneurship is not supported.

Entrepreneurial traits x resource support interaction. The full model testing the interaction between resource support and entrepreneurial traits was significant (R^2=.44 at $p \leq .0001$; see Table 4.21). The interaction term--ETxRS--in Table 4.22 was also significant with a semipartial correlation of .25; significant at $p \leq .01$. In order to assess the nature of the interaction, the scores on both resource support and entrepreneurial traits were divided into groups of high, medium, and low representing the upper, middle, and lower one-thirds of the scale values. Figure 4.4 provides the number of observations (n), and the cell, row, and column means of corporate level entrepreneurship.

In the column labeled high for ET (the sum of the linear scores of need for achievement and locus of control), the mean level of CLE_1 increases as the level of RS increases. A t test for the differences between means (one-tailed) of the low RS, high ET cell and the high RS,

Table 4.19. Results of the Full Regression Model for Hypothesis H3 of the Interaction of Entrepreneurial Traits and Centralization with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	5	221.17	44.23	8.48	.0001	.38
Error	68	354.88	5.21			
Total	73	576.05				

Table 4.20. Regression Coefficients and t Tests of Entrepreneurial Traits, Centralization, Resource Support, Entrepreneurial Focus, and the Interaction of ETxCent with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	p
ET	-.205	- .92	.3632
Cent	-.232	- .62	.5390
RS	-.043	- .39	.6978
EF	.535	5.23	.0001
ETxCent	.002	.47	.6383

Table 4.21. Results of the Full Regression Model for Hypothesis H3 of the Interaction of Entrepreneurial Traits and Resource Support with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	5	254.91	50.98	10.79	.0001	.44
Error	69	321.15	4.72			
Total	73	576.05				

Table 4.22. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Traits, Centralization, Resource Support, and the Interaction of ETxRS with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	sr_{yx}^2	p	r_{yx}
ET	- .0057	-3.20	-.29	.08	.0021	-.05
Cent	- .0643	-2.25	-.20	.04	.0279	-.34***
RS	-2.2318	-2.77	-.25	.06	.0071	.11
EF	.4847	5.00	.45	.21	.0001	.53***
ETxRS	.0003	2.75	.25	.06	.0076	.27**

**Significant at $p \leq .05$.

***Significant at $p \leq .01$.

RS	ET: Low	ET: Medium	ET: High	
High	15.50 (n=8)	14.29 (n=7)	16.67 (n=9)	16.00 (n=24)
Medium	14.55 (n=11)	14.86 (n=7)	15.38 (n=8)	14.89 (n=26)
Low	16.00 (n=6)	16.00 (n=10)	13.13 (n=8)	15.04 (n=24)
	15.20 (n=25)	15.18 (n=24)	15.12 (n=25)	

Figure 4.4. Interaction of Resource Support and Entrepreneurial Traits with Corporate Level Entrepreneurship: Cell, Row, and Column Means with Number of Observations.

high ET cell is significant (t=2.63; $p \leq .01$). In the column labeled medium for ET, the mean level of CLE_1 appears to be decreasing as RS in increases. Comparing the high RS, medium ET cell with the low RS, medium ET cell in a t test revealed that the differences were not significant (t=1.25; not significant at $p \leq .10$). The cell means in the low column of ET varied even less than the medium ET column across the range of RS so the only significant differences between rows (i.e., levels of RS) were in the high ET column.

There were two major changes in CLE_1 between columns. First, in the row labeled high RS, the mean difference between the high RS, medium ET and high RS, high ET was significant (t=1.70; $p \leq .05$) indicating the possibility that at high levels of RS, increases in ET from medium to high levels are associated with increases in CLE_1. At medium levels of RS, there does not appear to be significant variance in CLE_1 across levels of ET.

Second, at low levels of RS, there was an unexpected, significant change in the opposite direction than was predicted in H3. Comparing the low RS, medium ET cell (or the low RS, low ET cell since the cell means are equal) with the low RS, high ET cell, the degree of CLE_1 actually declined significantly (t=2.18; $p \leq .025$). In fact, the high ET, low RS cell has the lowest mean in Figure 4.4. The reason for this low degree of CLE_1 could stem from a mismatch between the chief executive officer who is high on ET, but an organization that is low on RS. A chief executive who is high on ET, but unable to implement an innovative direction for the firm (i.e., high CLE_1) because of scarce resources could be frustrated resulting in the low degree of CLE_1. At the other

extreme, the low ET, high RS cell would not represent the same mismatch because a high level of RS would not constrain the chief executive with low ET from following a conservative strategy (i.e., low CLE_1).

Since a comparison of the cell means across levels of resource support and entrepreneurial traits results in fewer significant differences than nonsignificant differences, the results are only suggestive about the nature of the interaction between resource support and entrepreneurial traits. The few significant differences between cell means suggest mixed support for the direction of the interaction term. Moreover, since the reliability of the resource support scale is low (.30; see Table 4.1, p. 88), measurement error could be distorting the pattern of results in the interaction term.

Resource support. The results of Table 4.22 revealed another unexpected finding. After entering the interaction term ETxRS into the model, resource support became significant (sr=-.25, $p \leq .01$). However, the semipartial correlation was not in the direction predicted in H2A. Further, the semipartial correlation (-.25) was greater, and in the opposite direction, from the simple correlation (r=.11) between resource support and CLE_1. The results show that after controlling for the interaction between resource support and entrepreneurial traits, there is a unique, negative linear relationship between resource support and CLE_1, i.e., that a low level of resource support is associated with a high degree of CLE_1. A plausible explanation for this relationship is that firms may not innovate until forced to do so, i.e., a conservative firm may resist becoming innovative to the point that stagnant market

conditions are reflected in declining sales and profits. Under these conditions, resource support, or the availability of slack resources, would shrink until the firm was forced to enter new product/market domains in order to remain a viable enterprise.

This rationale is supported by Ansoff (1972) and Miller and Friesen (1982). Ansoff (1972) argued that most organizations are conservative and do not become entrepreneurial unless faced with conditions of extreme crisis. Furthermore, such crises are frequent with business firms because their survival depends on their ability to maintain profitability. Similarly, Miller and Friesen (1982) have shown that firms tend to resist strategic change until the extremes created by this momentum are reversed by strong warnings from the environment.

Entrepreneurial traits x entrepreneurial focus interaction. The third interaction term to be tested was between entrepreneurial traits and entrepreneurial focus. The R^2 of .38 in Table 4.23 was significant at $p \leq .0001$, but the semipartial correlation in Table 4.24 for ETxEF was not significant. That the interaction term was not significant is probably due to the suppressor relationship between entrepreneurial traits and entrepreneurial focus (see Table 4.16, p. 112). These variables are interrelated and a causal path was suggested that entrepreneurial traits influence the degree of entrepreneurial focus (see Figure 4.1, p. 114). While the interaction between the variables is not supported, a potential causal linkage is supported by the unique variance shared between the two variables.

Table 4.23. Results of the Full Regression Model for Hypothesis H3 of the Interaction of Entrepreneurial Traits and Entrepreneurial Focus with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	5	219.83	43.97	8.39	.0001	.38
Error	68	356.22	5.24			
Total	73	576.05				

Table 4.24. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Traits, Centralization, Resource Support, and the Interaction of ETxEF with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
ET	- .00	- .00	.00	1.00	-.05
Cent	- .06	-1.88	-.18	.06	-.34***
RS	- .04	- .32	-.03	.75	.11
EF	.76	1.13	.11	.26	.53***
ETxEF	- .00	- .36	-.03	.72	.27**

**Significant at $p \leq .05$.

***Significant at $p \leq .10$.

Linear versus curvilinear effects of need for achievement and locus of control. The full regression model including all the significant predictors after testing Hypotheses H1, H2, and H3 is shown in Table 4.22. With the exception of Figure 4.4, entrepreneurial traits has been defined in the preceding analysis as the sum of the linear and curvilinear effects of need for achievement and locus of control. To test whether the quadratric terms for need for achievement and locus of control are significant, the increment in R^2 due to the addition of the curvilinear component is necessary (Cohen and Cohen, 1983). Therefore, a similar regression model including all the significant predictors from the model in Table 4.22 was analyzed, but the variable, entrepreneurial traits, was defined as the additive, linear effects of need for achievement and locus of control (i.e., less the curvilinear effects). As shown in Tables 4.25 and 4.26, respectively, the multiple R^2 and the semipartial correlations did not change. Hypotheses H1B and H1D, then, are not supported, and subsequent analysis will define the term "entrepreneurial traits" as the additive effects of need for achievement and locus of control.

The nature of the predicted curvilinear relationship was that some threshold value might occur above which the relationship between entrepreneurial traits and corporate level entrepreneurship would become stronger. Although not detecting a curvilinear relationship could be due to sample characteristics (e.g., a restricted range of values for need for achievment and locus of control), it is possible that the theoretical rationale for the proposed threshold effect is inaccurate. For example, in Wainer and Rubin's (1961) study, the relationship

Table 4.25. Results of the Full Regression Model for Hypotheses H1, H2, and H3 with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	5	254.73	50.95	10.78	.0001	.44
Error	68	321.33	4.73			
Total	73	576.05[a]				

[a]Discrepancy due to rounding.

Table 4.26. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for the Significant Predictors in Hypotheses H1, H2, and H3.

Source	B_{yx}	t	sr_{yx}	sr_{yx}^2	p	r_{yx}
ET[b]	- .66	-3.16	-.28	.08	.0024	-.05
Cent	- .06	-2.22	-.20	.04	.0299	-.34***
RS	-4.28	-2.73	-.25	.06	.0081	.11
EF	.49	5.05	.46	.21	.0001	.53***
ETxRS[b]	.04	2.71	.25	.06	.0085	.27**

[b]Linear effects only.

**Significant at $p \leq .05$.

***Significant at $p \leq .10$.

between need for achievement and company performance was nonlinear. Company performance was defined as mean growth rate which is probably measuring a different construct than corporate level entrepreneurship as measured in this study.

Hypotheses H4 and H5

Hypotheses H4 and H5 predicted a direct negative linear effect of organizational size on degree of corporate level entrepreneurship and an indirect negative linear effect of organizational size on degree of corporate level entrepreneurship via the level of centralization, respectively. The simple correlation between organization size and corporate level entrepreneurship was not significant (r=.10; see Table 4.2, p. 91).

Direct and indirect effects are partitioned from the total effects of a variable and the total effect is determined by the regression coefficient when the variable first enters a hierarchical regression model. A test of the significance of the simple correlation between organization size and corporate level entrepreneurship is equivalent to a test of the regression coefficient when organization size first enters a hierarchical model, i.e., the total effect of organization size on corporate level entrepreneurship. Since the total effect was not significant, it was not necessary to test for direct and indirect effects, and Hypotheses H4 and H5 are not supported. In addition, adding organization size to the regression model with all the significant predictor variables originating from Hypotheses H1, H2, and H3 (R^2=.44, see Table 4.25), only leads to a minor increment in the R^2

(R^2=.45, see Table 4.27) and the semipartial correlation coefficient for organization size (OS) was not significant (sr=.11; see Table 4.28).

Post Hoc Hypothesis Testing

The post hoc hypothesis testing covers six areas which were not explicitly addressed in Hypotheses H1, H2, H3, H4, and H5. The first two sections build on the model given in Table 4.26 by illustrating how past corporate level entrepreneurship (CLE_2) and organizational size influence the degree of CLE_1. The next two sections focus on the development of a more parsimonious model and compare the composite measures of entrepreneurial traits and centralization with their component parts, i.e., need for achievement versus locus of control and initiation versus approval, respectively, in predicting CLE_1. The fifth section tests a three-way interaction which is based on the results of Miller's (1983) research. The final section overviews the results of the residual analysis for the regression models tested in the study.

Past Corporate Level Entrepreneurship

In testing Hypothesis H2 with CLE_2 as the dependent variable (see Table 4.8), the semipartial correlation between entrepreneurial focus and CLE_2 was negative (sr=-.29, $p \leq .01$) while the semipartial correlation between entrepreneurial focus and CLE_1 was positive (sr=.43 at $p \leq .01$; see Table 4.6). Briefly, the explanation suggested for this shift rested on defining CLE_2 as past corporate level entrepreneurship and Miller and Friesen's (1982) concept of momentum. If this rationale were correct, then it would be equally consistent to predict that CLE_2 and

Table 4.27. Results of the Full Regression Model Including Organization Size as a Predictor of Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	6	33.11	5.52	9.27	.0001	.45
Error	67	39.89	.60			
Total	73	73.00				

Table 4.28. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Organization Size as a Predictor of Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
ET[b]	-2.03	-3.15	-.28	.0024	-.05
Cent	- .21	-2.10	-.20	.0400	-.34***
RS	-3.87	-2.73	-.25	.0080	.11
EF	.54	5.15	.47	.0001	.53***
ETxRS[b]	4.05	2.71	.24	.0085	.27**
OS	.11	1.18	.11	.2427	.10

[b]Linear effects only.

**Significant at $p \leq .05$.

***Significant at $P \leq .01$.

CLE_1 are negatively related, i.e., a conservative firm which has not been innovative in the past (low CLE_1) may be facing the need to develop new products, markets, or services (high CLE_1) while an entrepreneurial firm (high CLE_2) may be faced with the need to curb and control the excesses of innovation (low CLE_1). Since the simple correlation between CLE_1 and CLE_2 is not significant (r=-.11; see Table 4.2, p. 91), then the detection of a direct relationship between these variables is only possible after controlling for the effects of other predictors of CLE_1.

Table 4.29 gives the R^2 (.47) for the regression model with all the significant predictors developed from Hypothesis 3 (see Tables 4.25 and 4.26) with the addition of CLE_2 as a predictor. The regression coefficients, t tests, and semipartial and simple correlation coefficients are presented in Table 4.30. The semipartial correlation between CLE_2 and CLE_1 is significant (sr=-.17 at $p \leq .10$), and there is a direct, negative relationship between the two variables.

Since the semipartial correlation is greater than the simple correlation between CLE_1 and CLE_2, the presence of a suppressor variable is suggested. The two variables in the regression model in Table 4.30, which have significant simple correlations with CLE_2 (see Table 4.2, p. 91) are centralization and entrepreneurial focus. To determine the variable (or variables) which when entered into the regression model resulted in the significant semipartial between CLE_1 and CLE_2, two regression models were analyzed.

The first model included entrepreneurial focus and CLE_2 as predictors and the results are displayed in Tables 4.31 and 4.32. The semipartial correlation between CLE_2 and CLE_1 was not significant and

Table 4.29. Results of the Full Regression Model Including Past Corporate Level Entrepreneurship (CLE_2) as a Predictor of Present Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	6	34.35	5.72	9.92	.0001	.47
Error	67	38.65	.58			
Total	73	73.00				

Table 4.30. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Past Corporate Level Entrepreneurship (CLE_2) as a Predictor of Present Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
ET[b]	-2.48	-3.67	-.33	.0005	-.05
Cent	- .29	-2.79	-.25	.0068	-.34***
RS	-4.81	-3.26	-.29	.0018	.11
EF	.47	4.29	.38	.0001	.53***
ETxRS[b]	5.04	3.23	.29	.0019	.27**
CLE_2	- .19	-1.89	-.17	.0627	-.11

[b]Linear effects only.

**Significant at $p \leq .05$.

***Significant at $p \leq .01$.

Table 4.31. Results of Full Regression Model for Entrepreneurial Focus and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	2	162.72	81.36	13.98	.0001	.28
Error	71	413.34	5.82			
Total	73	576.05[a]				

[a]Discrepancy due to rounding.

Table 4.32. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Entrepreneurial Focus and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
EF	.49	5.17	.51	.0001	.53***
CLE_2	-.02	- .11	.01	.9144	-.11

***Significant at $p \leq .01$.

declined substantially when centralization was entered (sr=.01; see Table 4.32). Tables 4.33 and 4.34 show the results of the regression equation with centralization and CLE_2 as predictors. The semipartial correlation between CLE_2 and CLE_1 is significant when controlling for levels of centralization (the simple correlation between centralization and CLE_2 is r=-.20 at $p \leq .10$; see Table 4.2, p. 90). Furthermore, the semipartial correlation between centralization and CLE_1 also increased with the addition of CLE_2 to the model (sr=-.37 at $p \leq .001$ in Table 4.34). In short, when the unique variance between centralization and CLE_2 (that is not associated with CLE_1) is controlled, the direct effects of each variable are greater than the simple correlations would indicate.

Organizational Size and Past Corporate Level Entrepreneurship

Organization size and CLE_2, the number of SIC codes, are positively related (r=.25 at $p \leq .05$; see Table 4.2, p. 91) indicating that diversity is associated with a corresponding growth in organization size. Since these variables are correlated, controlling for the effect of CLE_2 on CLE_1, may reveal a stronger and significant association between organizational size and CLE_1. Table 4.35 displays the R^2 (.49) with organization size (OS) added to the regression model tested in Table 4.30 (R^2=.47) which resulted in a minor increment in R^2. The semipartial correlation between OS and CLE_1 was significant (sr=.15 at $p \leq .10$; see Table 4.36), but not in the direction predicted by Hypothesis H4.

Table 4.33. Results of Full Regression Model for Centralization and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	2	86.10	43.05	6.24	.003	.15
Error	71	489.96	6.90			
Total	73	576.05[a]				

[a]Discrepancy due to rounding.

Table 4.34. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients for Centralization and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1^2).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
Cent	-.11	-3.38	-.37	.001	-.34***
CLE_2	-.31	-1.69	.18	.096	-.11

***Significant at $p \leq .01$.

Table 4.35. Results of the Full Regression Model Including Organization Size and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	7	36.00	5.14	9.17	.0001	.49
Error	66	37.00	.56			
Total	73	73.00				

Table 4.36. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Organization Size and Past Corporate Level Entrepreneurship (CLE_2) with Present Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
ET[b]	-2.56	-3.83	-.34	.0003	-.05
Cent	- .29	-2.82	-.25	.0064	-.34***
RS	-5.01	-3.43	-.30	.0011	.11
EF	.47	4.36	.38	.0001	.53***
ETxRS[b]	5.24	3.40	.30	.0011	.27**
OS	.16	1.71	.15	.0911	.10
CLE_2	- .23	-2.27	-.20	.0265	-.11

[b]Linear effects only.

**Significant at $p \leq .05$.

***Significant at $p \leq .01$.

The prevailing view is that larger organizations tend to be less entrepreneurial and less flexible than smaller organizations (Ansoff, 1972; Mintzberg, 1973). A possible explanation for this unexpected positive relationship between OS and CLE_1 may have to do with the organizational sizes represented in the sample group. Although the mean number of employees was 2,120, there was a large standard deviation (6,663; see Table 4.1, p. 88) and approximately half the sample group was comprised of firms with below 500 employees. The frequency distribution of organizational size is, consequently, positively skewed. Organizational size may be negatively related to corporate level entrepreneurship for large, bureaucratic organizations, but positively related to corporate level entrepreneurship in smaller organizations. In smaller firms, growth and diversity may require corresponding increments in organization size. Increases in size may improve the firm's ability to implement strategic growth, i.e., growth would be constrained by an inadequate number of personnel to implement entrepreneurial strategies.

Need for Achievement versus Locus of Control

Need for achievement and locus of control are significantly correlated ($r=.52$ at $p \leq .01$; see Table 4.2, p. 91) so it may be possible that the measure of one may be substituted for the measure of both without any substantial loss in the predictive power of the full regression model in Table 4.36. If this is the case, the model could be simplified and thus more parsimonious. The R^2 for the substitution of need for achievement (Nach) for entrepreneurial traits (i.e., the locus

of control scale is omitted) falls from an R^2 of .49 in Table 4.35 to an R^2 of .45 in Table 4.37. The semipartial correlations for each variable are given in Table 4.38, and the ETxRS interaction was changed to an interaction between need for achievement and resource support (NachxRS). In general, there is a small decline in the semipartials when need for achievement is substituted for entrepreneurial traits. The decline in R^2 is marginal and all of the semipartials in Table 4.38 are significant indicating that need for achievement is a reasonably good substitute, and more parsimonious, than using both traits in the model.

There is a similar decline in R^2 (.45) using locus of control (Loc) and the interaction of locus of control and resource support (LocxRS) as the substitute for entrepreneurial traits (see Table 4.39). In Table 4.40, most of the semipartial correlations decline and CLE_2 falls to a significance level of $p \leq .10$ while OS is not significant. Entrepreneurial focus shows a slight increase. Although there is no difference in the R^2 when need for achievement or locus of control is substituted for entrepreneurial traits, it appears that need for achievement may be the best substitute in that all the semipartials of the predictors in the full model are significant in Table 4.38.

Centralization--Initiation versus Approval

The centralization scale (see Appendix B-3) is divided into the initiation and approval of various types of decisions. The simple correlation between approval and initiation is also substantial ($r=.56$ at $p \leq .01$; see Table 4.2, p. 91). In addition, initiation generally shows stronger correlations than approval with other variables in the

Table 4.37. Results of the Full Regression Model Including Need for Achievement with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	7	261.54	37.36	7.84	.0001	.45
Error	66	314.52	4.77			
Total	73	576.05[a]				

[a]Discrepancy due to rounding.

Table 4.38. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Need for Achievement with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
Nach	-1.47	-3.25	-.30	.0018	-.01
Cent	- .08	-2.69	-.24	.0091	-.34***
RS	-5.33	-2.90	-.26	.0051	.11
EF	.38	3.60	.33	.0006	.53***
NachxRS	.08	2.89	.26	.0052	.12
OS	.00	1.77	.16	.0810	.10
CLE_2	- .40	-2.17	-.20	.0339	-.11

***Significant at $p \leq .01$.

Table 4.39. Results of the Full Regression Model Including Locus of Control with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	7	256.59	36.66	7.57	.0001	.45
Error	71	319.46	4.84			
Total	73	576.05				

Table 4.40. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Locus of Control with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
Loc	-1.08	-3.07	-.28	.0031	-.06
Cent	- .07	-2.20	-.20	.0310	-.34***
RS	-3.32	-2.75	-.25	.0076	.11
EF	.46	4.58	.42	.0001	.53***
LocxRS	.06	2.73	.25	.0080	.08
OS	.00	1.46	.13	.1491	.10
CLE_2	- .29	-1.65	-.15	.1041	-.11

***Significant at $p \leq .01$.

study (e.g., entrepreneurial traits, entrepreneurial focus, CLE_1, and CLE_2; see Table 4.2, p. 91). Therefore, these subscales may be substituted for one another, and particularly the initiation subscale, for the centralization scale without any substantial change in the regression model in Tables 4.35 and 4.36.

Table 4.41 shows that the R^2 using initiation (CentI) as the predictor of centralization (i.e., omitting the approval subscale) actually leads to a small increment in R^2 to .51 from the R^2 of .49 in Table 4.35. Five of the semipartial correlations increase slightly, including CentI (sr=-.27, $p \leq .002$; see Table 4.42), which indicates that CentI predicts levels of CLE_1 as well, and slightly better than the composite measure of Cent (sr=-.25 at $p \leq .01$; see Table 4.36). The semipartial correlation for EF declines a small amount as does OS, with OS now becoming nonsignificant (sr=.13 at $p \leq .125$; see Table 4.42). On the whole, CentI is an adequate substitute for the centralization scale in predicting CLE_1 and reduces the model to a more parsimonious form.

On the other hand, substituting approval of decisions (CentA) for the composite measure of centralization (i.e., omitting the initiation scale) leads to a drop in the full model R^2 from .49 in Table 4.35 to .45 in Table 4.43. Five of the semipartial correlations in Table 4.44 also fall in value, one of which is CentA. The semipartial correlation between CentA and CLE_1 is not significant (sr=-.13; see Table 4.44). Thus, the measure of the organizational level which is responsible for initiating decisions is a significant predictor of CLE_1 as well as an appropriate substitute for the composite measure while the

Table 4.41. Results of the Full Regression Model Including Initiation with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	7	37.05	5.29	9.72	.0001	.51
Error	66	35.95	.54			
Total	73	73.00				

Table 4.42. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Initiation with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
ET[b]	-2.69	-4.05	-.35	.0001	-.05
CentI	- .34	-3.18	-.27	.0023	-.36***
RS	-5.25	-3.62	-.31	.0006	.11
EF	.44	4.10	.35	.0001	.53***
ETxRS[b]	5.49	3.59	.31	.0006	.27**
OS	.14	1.55	.13	.1251	.10
CLE_2	- .25	-2.46	-.21	.0165	-.11

[b]Linear effects only.

**Significant at $p \leq .05$.

***Significant at $p \leq .01$.

Table 4.43. Results of the Full Regression Model Including Approval with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	7	32.69	4.67	7.65	.0001	.45
Error	66	40.31	.61			
Total	73	73.00				

Table 4.44. Regression Coefficients, t Tests, and Semipartial and Simple Correlation Coefficients Including Approval with Corporate Level Entrepreneurship (CLE_1).

Source	B_{yx}	t	sr_{yx}	p	r_{yx}
ET[b]	-2.21	-3.25	-.30	.0018	-.05
CentA	- .13	-1.37	-.13	.1765	-.20*
RS	-4.31	-2.88	-.26	.0053	.11
EF	.56	5.28	.48	.0001	.53***
ETxRS[b]	4.53	2.87	.26	.0055	.27**
OS	.17	1.78	.16	.0800	.10
CLE_2	- .16	-1.58	-.14	.1189	-.11

[b]Linear effects only.

*Significant at $p \leq .10$.

**Significant at $p \leq .05$.

***Significant at $p \leq .01$.

organizational level responsible for approving decisions is not a significant predictor of CLE_1.

Entrepreneurial Traits x Centralization x Organizational Size Interaction

The direction of the direct effect between entrepreneurial traits and corporate level entrepreneurship is not consistent with previous empirical and theoretical research which predicts a positive relationship between the two variables. Miller (1983) predicted and found the strongest relationship between locus of control and corporate entrepreneurship in small, centralized firms (i.e., simple firms) which is equivalent to predicting a three-way interaction. These firms comprised one of three types and although not all the variables used to classify the other two types of firms were measured in the present study, a test of the three way interaction, i.e., that there is a stronger, positive relationship between entrepreneurial traits and corporate level entrepreneurship in small, centralized organizations, is possible and might indicate that the results of the present study are more consistent with previous research than the regression models indicate thus far.

The full model R^2 in Table 4.45 was significant (R^2=.20 at $p<.03$). To test the three-way interaction, the main effects as well as the appropriate two-way interactions were included in Table 4.46. As Table 4.46 indicates, the three-way interaction (ETxCentxOS) was not significant. It is probably not surprising that the three-way interaction was not significant in that the pattern of results in this

Table 4.45. Results of the Full Regression Model Including a Three-Way Interaction with Corporate Level Entrepreneurship (CLE_1).

Source	DF	SS	MS	F	p	R^2
Model	7	117.37	16.77	2.41	.03	.20
Error	66	458.68	6.95			
Total	73	576.05				

Table 4.46. Regression Coefficients and t Tests Including a Three-Way Interaction with Corporate Level Entrepreneurship (CLE_1).

Source	b	t	p
ET[b]	-.00	- .55	.58
Cent	-.18	- .78	.44
OS	-.01	-1.46	.15
CentxOS[b]	.00	1.23	.22
ETxCent[b]	.00	.32	.75
ETxOS[b]	.00	1.31	.20
ETxCentxOS[b]	-.00	-1.07	.29

[b]Linear effects only.

study differ from Miller's (1983) study. For example, Miller (1983) found a negative relationship between corporate entrepreneurship and external locus of control, whereas this study found a negative relationship between CLE_1 and an internal locus of control.

Residual Analysis

The regression models were examined for correct form by graphing the residuals. The residuals against the independent variables, as well as the residuals against the predicted Y values (e.g., CLE_1), were plotted for each regression model. The graphs were used to diagnose potential problems with curvilinearity, outliers, heteroscedasticity, and omission of an important independent variable (Cohen and Cohen, 1983).

Examination of the residuals did not reveal any problems (e.g., see Figure 4.5 for a plot of the residuals against the predicted Y values for the regression model shown in Table 4.36, p. 139). There was no evidence of curvilinearity (and the curvilinear terms which were analyzed were not significant). There also were no extreme residuals and the scatterplots were generally constant over the range of values examined. Finally, ommission of an independent variable, e.g., time, was not suggested. The residual analysis, therefore, indicated that the regression models were adequate.

Summary

To summarize the results of the analysis, Figure 4.6 presents the major variables and their interrelationships in predicting corporate

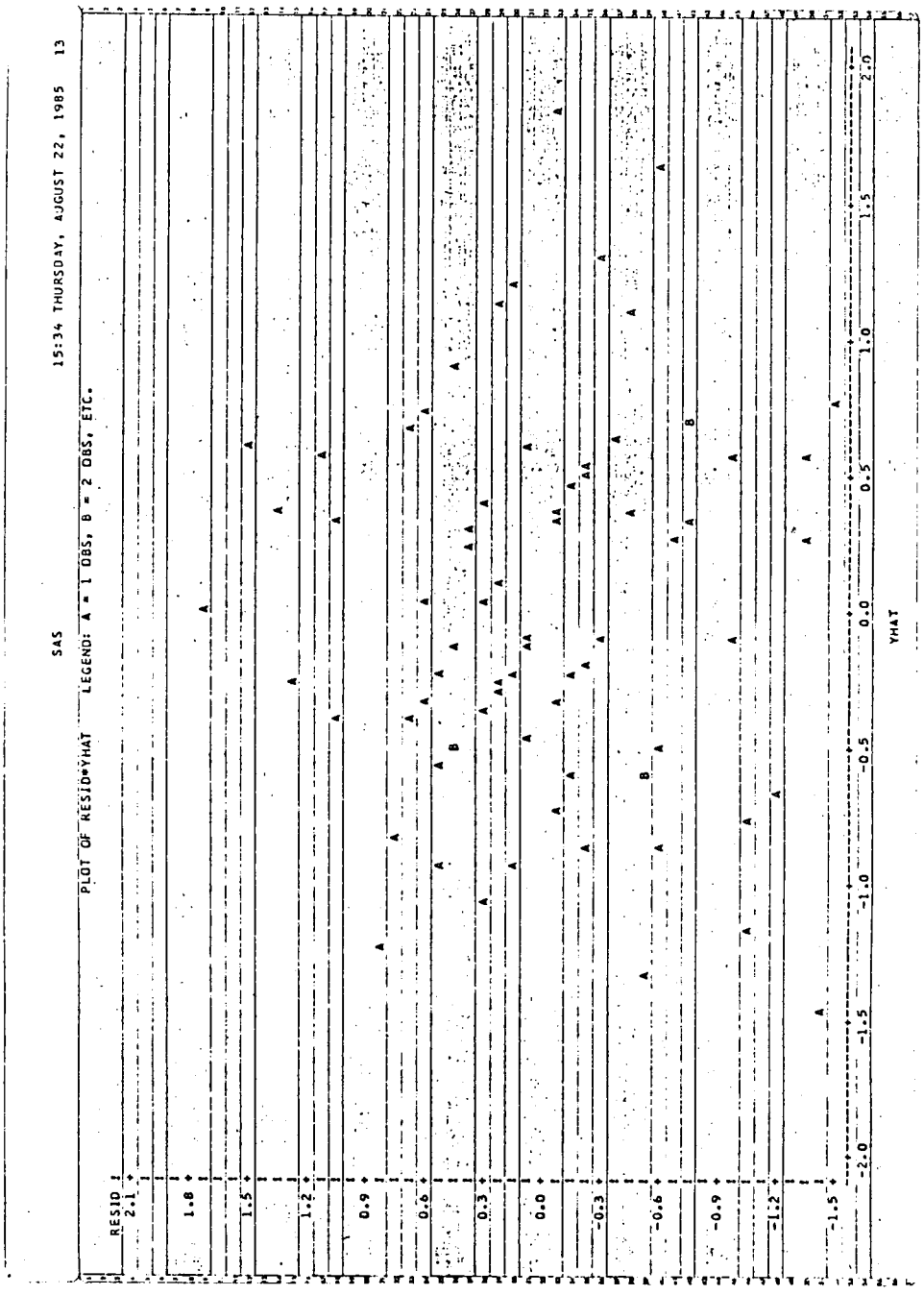


Figure 4.5. Example of Residuals Versus Predicted Values in Table 4.36.

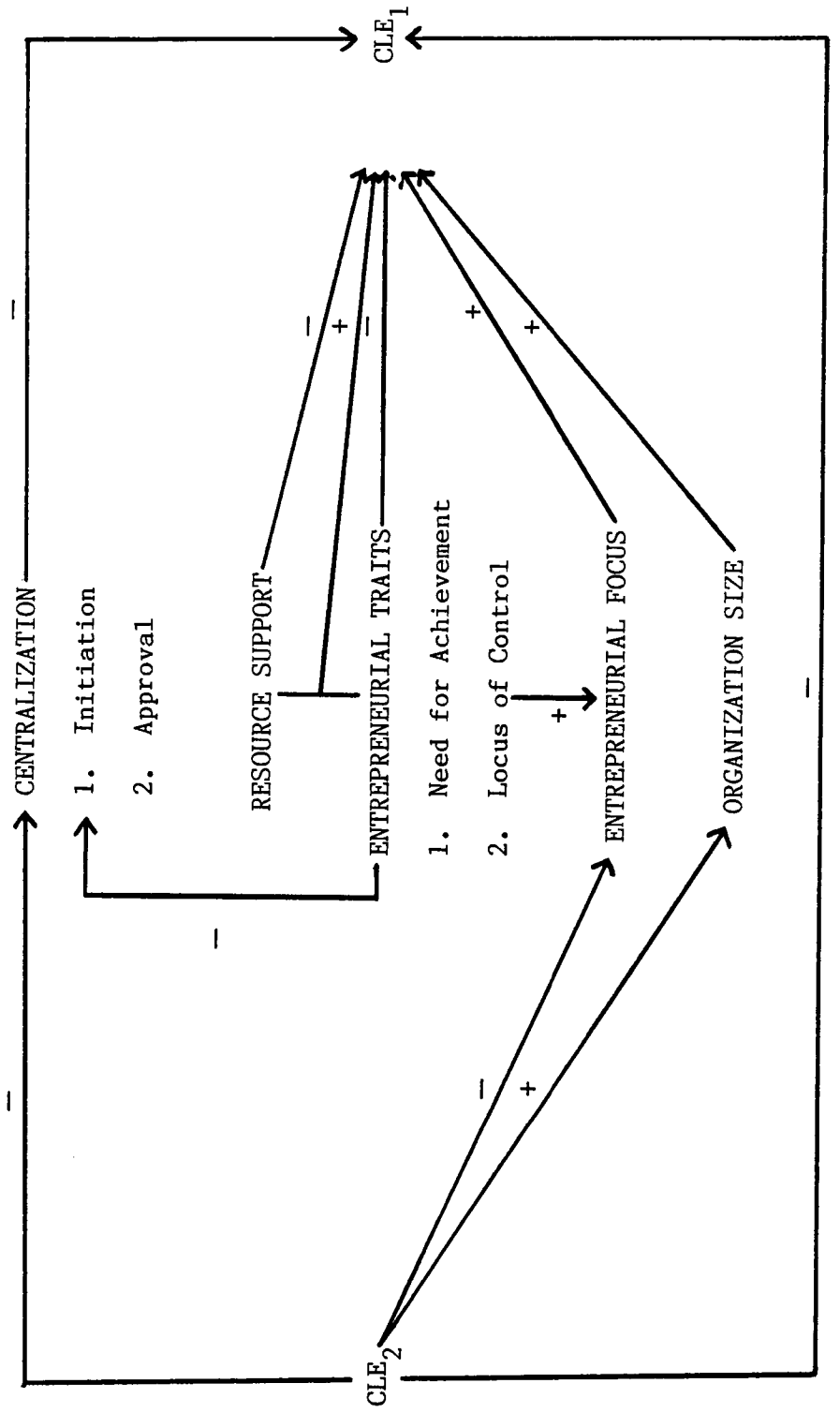


Figure 4.5. Major Variables and Interrelationships with Corporate Level Entrepreneurship.

level entrepreneurship (CLE_1). The directionality of a given relationship is indicated by a plus (+) or a minus (-) symbol.

Beginning with the direct effects of the variables which are associated with CLE_1, there are seven arrows which correspond to the seven predictors in the regression model in Table 4.36 (p. 139). First, there is a negative relationship between centralization and CLE_1 indicating that the more decentralized the organizational structure, the higher the degree of CLE_1. Entrepreneurial focus has a strong, positive relationship with CLE_1 reflecting that when the planning process is oriented toward the search for new, long-term growth alternatives and not short-term efficiency, the resulting strategic direction of the firm is more entrepreneurial.

Entrepreneurial traits and resource support each have a direct, negative relationship with CLE_1. Further, these two variables interact in predicting the degree of CLE_1. In general, when entrepreneurial traits are high, increases in the level of resource support are associated with corresponding increases in CLE_1. Similarly, at higher levels of resource support, increases in the level of entrepreneurial traits are associated with increases in CLE_1. Finally, when entrepreneurial traits are high and resource support is low, CLE_1 is also quite low.

Organizational size has a direct, positive association with CLE_1, i.e., increases in organization size are associated with modest increases in CLE_1. Finally, past corporate level entrepreneurship (CLE_2) has a negative relationship with CLE_1, i.e., if an organization's past strategy has been entrepreneurial, the present strategy is more

likely to be conservative, and if the past strategy has been conservative, the present strategy is more likely to be entrepreneurial.

The indirect effects in Figure 4.5 are illustrated by the arrows drawn between the predictors of CLE_1 and generally reflect that a given variable may influence another variable which has a direct effect on CLE_1. Entrepreneurial traits has two indirect effects on CLE_1. First, high entrepreneurial traits are associated with decentralization of the initiation of decisions. Specifically, high need for achievement is positively associated with delegating the initiation of decisions to lower organizational levels. Similarly, there is a positive relationship between entrepreneurial traits and entrepreneurial focus indicating that an entrepreneurial chief executive may influence the decision making process of the corporate planning group, which in turn has a large, direct effect on CLE_1.

Past corporate level entrepreneurship (CLE_2) has an indirect effect on CLE_1 via several paths. First, the relationship between CLE_2 and centralization is negative, e.g., if an organization's past strategy was innovative, the organization is more likely to be decentralized, which in turn is associated with the current strategy being entrepreneurial. Second, CLE_2 has a negative relationship with entrepreneurial focus so that an organization that has been entrepreneurial in the past is less likely to be currently seeking new, long-term growth opportunities. Finally, CLE_2 has an indirect effect via organization size which illustrates that when an organization pursues growth and diversification, corresponding increases in organizational size follow.

CHAPTER 5

SUMMARY AND CONCLUSIONS

This chapter begins with a summary of the study. A discussion of the implications follows in the second section, while the third section contains the limitations of the study. The last section includes suggestions for future research.

Summary

This section includes a statement of the problem, hypotheses, methodology, and major results.

Statement of the Problem

The purpose of this study was to develop a model which would predict how organizations change strategic direction and innovate into new product, service, and/or market areas--corporate level entrepreneurship. To this end, the main focus was to examine the determinants of corporate level entrepreneurship as well as analyze and suggest how the predictors, themselves, might interrelate in predicting corporate level entrepreneurship. Questions which were central to this purpose concerned: (1) the role of the chief executive's personality, (2) the role of organizational characteristics and (3) the interaction of these trait and situational variables in predicting the degree of corporate level entrepreneurship. An understanding was sought of how organizations realign their strategic direction into a new fit with the external environment.

Hypotheses

The first two sets of hypotheses were organized into groups. The first group included as independent variables the linear and curvilinear effects of need for achievement and locus of control (i.e., entrepreneurial traits). The second group was comprised of centralization, resource support, and entrepreneurial focus as independent variables (i.e., situational favorableness). In total, there were five hypotheses, which included the two groups of hypotheses. The relationship between each independent variable and corporate level entrepreneurship is briefly stated in the hypotheses which follow.

Theoretical Hypothesis: H1A. There is a positive linear relationship between degree of need for achievement and degree of corporate level entrepreneurship, over and above any second degree curvilinear effect of need for achievement, any negative linear effect of locus of control, and any second degree curvilinear effect of locus of control.

Theoretical Hypothesis: H1B. There is a positive second degree curvilinear relationship between degree of need for achievement and degree of corporate level entrepreneurship, over and above any positive linear effect of need for achievement, any negative linear effect of locus of control, and any second degree curvilinear effect of locus of control.

Theoretical Hypothesis: H1C. There is a positive linear relationship between degree of internal locus of control and the degree

of corporate level entrepreneurship, over and above any positive linear effect of need for achievement, any second degree curvilinear effect of need for achievement, and any second degree curvilinear effect of locus of control.

Theoretical Hypothesis: H1D. There is a positive second degree curvilinear relationship between locus of control and corporate level entrepreneurship, over and above any positive linear effect of need for achievement, any second degree curvilinear effect of need for achievement, and any negative linear effect of locus of control.

Theoretical Hypothesis: H2A. There is a positive linear relationship between degree of centralization and degree of corporate level entrepreneurship, over and above any positive linear effect of resource support, and any positive linear effect of entrepreneurial focus.

Theoretical Hypothesis: H2B. There is a positive linear relationship between degree of resource support and degree of corporate level entrepreneurship, over and above any positive linear effect of centralization, and any positive linear effect of entrepreneurial focus.

Theoretical Hypothesis: H2C. There is a positive linear relationship between the degree of entrepreneurial focus and corporate level entrepreneurship, over and above any positive linear effect of centralization, and any positive linear effect of resource support.

Theoretical Hypothesis: H3. As the degree of situational favorableness increases, the relationship between degree of entrepreneurial traits and degree of corporate level entrepreneurship will become stronger and more positive, over and above any positive main effect of entrepreneurial traits and any positive main effect of situational favorableness.

Theoretical Hypothesis: H4. There is a direct, negative linear effect of organizational size on degree of corporate level entrepreneurship.

Theoretical Hypothesis: H5. There is an indirect, negative linear effect of organizational size on degree of corporate level entrepreneurship via the level of centralization.

Methodology

A summary of the measures, pilot test, sample, procedure, and major results follows below.

Measures. Corporate level entrepreneurship, the dependent variable, was measured two differenct ways. First, a Likert type scale was developed as a subjective measure of the term. Second, the number of SIC codes reported by each firm in the Million Dollar Directory (1985) was used as an objective scale for corporate level entrepreneurship.

Need for achievement was measured with a shortened and modified version of Hermans' (1970) achievement motivation scale. Locus of control was measured by Paulhus and Christie's (1981) personal efficacy

scale. Centralization, resource support, and entrepreneurial focus were measured with a Likert type scale. Organization size was measured by the total number of full-time employees.

Pilot Test. Five chief executive officers were contacted by telephone and agreed to fill out the questionnaire during an on-site interview. The purpose of the interview was to ascertain that the chief executives understood the directions and questionnaire items. Candid, critical evaluation of the questionnaire was encouraged. Also, the respondents were asked to make judgments concerning the relevance of the questionnaire items to their organizaiton, and suggestions for modifying any part of the questionnaire were solicited.

Based on the recommendations and responses of the pilot study participants as well as an examination of the variance of each measurement scale, a decision was made to increase the total number of questionnaire items as well as make minor modifications to the original items. The need for achievement scale was expanded to include all of the original items on Hermans' (1970) measure except those referring to "school" and "shopping." Paulhus and Christie's (1981) personal efficacy scale was not changed. Miller and Friesen's (1982) measure of centralization was substituted for the pilot study centralization scale.

Sample. After estimating the relevant parameters, the necessary sample size was calculated to be 51. In selecting the population of firms to sample, Miller's (1983) sample group was used as a reference point. Two characteristics were viewed to be important in determining the appropriate sample group for this study--a broad representation of

types of firms and a range of organizational sizes with approximately half above and half below 500 employees. The population of Tennessee firms listed in the Million Dollar Directory (1984, 1985) met these conditions and a computer search procedure was initiated to select a stratified sample. The names of all firms above 400 employees were selected while a random sample generated the names of firms below 400 employees from the Million Dollar Directory (1984, 1985). An equal number of firms (120) fell above and below the dividing mark of 500 employees.

Procedure. A mail survey was used to collect the data. A great deal of emphasis was placed on the development of the cover letter and incorporated the majority of Dillman's (1978) and Houston and Nevin's (1977) recommendations. A University of Tennessee letterhead was used, and an altruistic appeal was made to the chief executive officers. Why the chief executive's personal participation was critical to the success of the research; how the firm was selected; why the firm was important to the study; the short amount of time required to complete the questionnaire; and confidentiality was emphasized. A book premium--The Official MBA Handbook of Great Business Quotations (1984)--was enclosed in order to distinguish the survey from other surveys and potentially increase the response rate.

The initial mailing packet consisted of the two-page, personalized cover letter, the book premium, a self-addressed and stamped return envelop, and the two-page questionnaire. The order of the measurement scales on the questionnaire was based on judgements concerning ease of

response, creating initial interest, and reducing the likelihood that the questionnaire would be forwarded to another individual. The mailing envelop included a University of Tennessee return address, individually typed mailing labels, a bright blue and white "CONFIDENTIAL" label, and first-class postage. All 120 packets were mailed on April 26, 1985.

The telephone follow-up calls were made two weeks later. A number of organizations had changed addresses and/or chief executives so additional packets were mailed. Several firms had gone out of business or restructured bringing the actual number of organizations surveyed down to 115. There were only minor problems encountered in the data collection and by the end of 7 weeks, a total of 74 questionnaires had been returned resulting in a response rate of 64 percent.

Major Results. The data sample of 74 business firms ranged in size from sales of $2 million to over $1 billion, and mean sales were $130 million. Ranging from 8 to 52,000 average full-time employees, the average number of employees was 2,120. The sample group was comprised of a broad representation of industries including manufacturers; finance, insurance, and real estate; wholesalers; construction; retail; transportation, communications, and utilities; and services, and no major SIC industry group represented more than 4 percent of the sample.

The internal consistency reliability coefficients were high for the measures of need for achievement (Hermans, 1970), locus of control (Paulhus and Christies, 1981), centralization (Miller and Friesen, 1982) and corporate level entrepreneurship, but relatively low for resource support and entrepreneurial focus. Since the product-moment

correlations revealed substantial multicollinearity among the predictors, the analysis of the hypotheses also focused on the nature of these intercorrelations.

The primary analysis consisted of comparisons of the semipartial correlation coefficients from a given regression model with simple correlation coefficients combined with hierarchical regression analysis designed to examine the pattern of intercorrelations among the variables. Hypotheses H1A, H1B, H1C, and H1D were not supported with either the subjective measure of corporate level entrepreneurship or the objective scale (i.e., number of SIC codes). Entrepreneurial traits, considered alone, did not significantly predict changes in either dependent variable.

The analysis of Hypotheses H2A, H2B, and H2C with the subjective scale of corporate level entrepreneurship provided support for Hypothesis H2C, confirming a positive association with entrepreneurial focus. Hypotheses H2A and H2B, concerning centralization and resource support, respectively, were not supported.

With the objective measure of corporate level entrepreneurship, Hypothesis H2B, again, was not supported. Both the semipartial correlations for centralization and entrepreneurial focus were significant, but not in the direction that was predicted in Hypothesis H2A and H2C. Since the semipartial correlation between entrepreneurial focus and the subjective measure of corporate level entrepreneurship was positive, but negative with the objective measure, a plausible explanation centering on Miller and Friesen's (1982) concept of strategic momentum was discussed. Further, a clarification of the time

frames referenced by the dependent variables suggested that the objective measure of corporate level entrepreneurship reflected an earlier time period and more accurately represented past corporate level entrepreneurship (i.e., past strategy) while the subjective measure represented present corporate level entrepreneurship. Therefore, the objective measure of corporate level entrepreneurship was subsequently analyzed as a predictor of present corporate level entrepreneurship and not as a value to be predicted.

Hypothesis H3 was first analyzed using the composite score of entrepreneurial traits (i.e., the sum of the linear and curvilinear effects of need for achievement and locus of control) and the composite score of situational favorableness (i.e., the sum of the linear effects of centralization, resource support, and entrepreneurial focus). The interaction term was not significant.

Hypothesis H3 was then analyzed examining the interaction of each individual situational predictor--centralization, resource support, and entrepreneurial focus--with the composite scale of entrepreneurial traits. Of the three possible interactions, only the interaction between resource support and entrepreneurial traits with corporate level entrepreneurship was significant. When entrepreneurial traits are high, increases in the level of resource support were associated with corresponding increases in corporate level entrepreneurship. Similarly, at higher levels of resource support, increases in the level of entrepreneurial traits were associated with increases in corporate level entrepreneurship. An unexpected finding was that when entrepreneurial traits are high and resource support is low, corporate level

entrepreneurship dropped to the lowest level. An explanation was suggested that this finding was the result of a mismatch between the chief executive and the situation.

In analyzing Hypothesis H3, many of the predictors that were not significant in H1 and H2, became significant as terms were added to the regression models. In these cases, since the semipartials were often greater than the simple correlations between a given independent variable and the dependent variable, a suppressor relationship was indicated. In fact, most of the multicollinearity among the independent variables could be attributed to suppressor relationships, i.e., unique variance between two predictors that was not associated with the dependent variable, and not redundant variance between two variables which jointly predicted the dependent variable.

The semipartial correlation between entrepreneurial traits and corporate level entrepreneurship became significant when entrepreneurial focus was added to the model. Entrepreneurial focus and entrepreneurial traits were positively correlated, and an explanation was suggested that the chief executive may have an indirect impact on corporate level entrepreneurship via his/her influence on entrepreneurial focus. After controlling for this relationship, there was an unexpected negative association between entrepreneurial traits and corporate level entrepreneurhsip.

Centralization became a significant predictor of corporate level entrepreneurship when entrepreneurial traits was added to the regression model. Thus, entrepreneurial traits again may affect corporate level entrepreneurship indirectly via centralization. An entrepreneurial

chief executive may influence the organizational structure by decentralizing decision making responsibility, and particularly decentralizing the initiation of decisions, i.e., the variable entrepreneurial traits was significantly correlated with the initiation of decisions and not the approval of decisions. After controlling for this relationship, there was a significant, negative semipartial correlation between centralization and corporate level entrepreneurship. Hypothesis H2A predicted a positive relationship between these variables. Therefore, Burgelman (1983) Hage and Aiken (1970), and Thompson's (1969) position that centralized power structures may stifle creative problem solving and innovation is supported.

The final predictor which became significant in testing Hypothesis H3 was resource support. After entering the interaction term between resource support and entrepreneurial traits, there was an unexpected negative relationship between resource support and corporate level entrepreneurship. An explanation for this finding was that firms may resist becoming innovative to the point that stagnant market conditions are reflected in declining resource support. Under these conditions, the firm may be forced to enter new product market domains in order to remain a viable enterprise.

Hypotheses H4 and H5 were not supported. Since the total effect of organizational size on corporate level entrepreneurship was not significant, it was not necessary to test the direct and indirect effect of organization size via centralizaiton.

In the post hoc analysis, past corporate level entrepreneurship (i.e., number of SIC codes) became a significant predictor of corporate

level entrepreneurship (present) when centralization was entered into the regression model. Organization size became a significant predictor of corporate level entrepreneurship after controlling for the relationship between past and present corporate level entrepreneurship. The positive direction was opposite of that predicted in Hypotheses H4 and H5, and a possible reason for this finding is that growth and corporate level entrepreneurship in relatively small organizations may require corresponding increments in organization size.

To simplify the full regression model which predicted corporate level entrepreneurship, a comparison was made between entrepreneurial traits defined as the linear and curvilinear effects of need for achievement and locus of control and entrepreneurial traits defined as simply the linear effects of both variables. There was not a significant difference in the multiple R^2 terms, so only the composite, linear effects of need of need for achievement and locus of control are necessary to predict corporate level entrepreneurship. A comparison of the linear effect of each trait variable in predicting corporate level entrepreneurship indicated that need for achievement was a better, more parsimonious substitute for the composite scale than locus of control. In addition, comparing the predictability of the composite centralization scale with its component parts--initiation and approval of decisions--indicated that initiation of decisions was a suitable substitute for the composite scale and a significant predictor of corporate level entrepreneurship while approval was not.

Finally, a three-way interaction between entrepreneurial traits, centralization, and organization size, was tested to compare the results

of this study with Miller's (1983) simple firms. Specifically, a stronger, positive relationship between entrepreneurial traits and corporate level entrepreneurship in small, centralized firms was postulated, but the three-way interaction was not supported.

Implications

The results of this study suggest four major areas that are related to corporate level entrepreneurship and mechanisms whereby an organization could reorient the strategic management process toward renewal and growth into new product, service, and/or market domains. Understanding the determinants of corporate level entrepreneurship requires an understanding of how these variables interact. Since a change in one is often associated with a change in another, a gestalt perspective incorporating a number of variables is necessary in reorienting the strategic direction of a firm.

First, organizational characteristics which are associated with corporate level entrepreneurship could be designed to complement and even foster the development of innovative strategies. Decentralizing the organizational structure may create the conditions necessary to creative problem solving and solutions. Even more importantly and related to a decentralized structure, a high degree of entrepreneurial focus may be necessary. Orienting the decision making process toward the generation of a number of new long-term growth opportunities may be critical to the discovery and then the actual formulation of an entrepreneurial response. Finally, planning for corporate level entrepreneurship may depend on whether an organization is large enough

to implement strategic change, so organizational size and growth may be a necessary prerequisite to innovation in smaller organizations.

Second, in view of the complexity of organizations and strategic change, it is probably not surprising that the chief executive's personality has a substantial impact on organization characteristics. Working within a complex system, the chief executive may be most effective in influencing the degree of centralization and entrepreneurial focus, which in turn are associated with corporate level entrepreneurship. Moreover, since entrepreneurial focus consistently showed the strongest relationship to corporate level entrepreneurship (and was negatively associated with centralization), a chief executive officer who is seeking strategic change might decentralize the initiation of decisions and encourage the development of an entrepreneurial focus in the strategic planning group.

Third, the potential for matching the chief executive personality to the situation is illustrated in the very low level of corporate level entrepreneurship which resulted when the chief executive personality was entrepreneurial, but the resource support was low. Similarly, fitting the entrepreneurial personality with a situation characterized by high resource support (and vice versa) may be instrumental in achieving an entrepreneurial corporate strategy.

Fourth, the relationship between past corporate level entrepreneurship and resource support with present corporate level entrepreneurship suggests that an organization might plan for the excesses created by momentum and use these variables as a signal to detect and correct potential problems. For example, if an organization

has been conservative in the past, an innovative strategy might be considered to avoid the problems of stagnation and declining resource support.

Limitations

The model developed in this study suggests causal paths whereby certain variables are viewed as determinants of corporate level entrepreneurship. The regression analyses and terminology of "independent" and "dependent" variables further imply the notion of causality. Even though reasonable and even strong arguments can be set forth that certain variables precede others in time (e.g., past and present corporate level entrepreneurship), the study is essentially a cross-sectional one. Further, the independent variables were not manipulated; a condition which would strengthen causal inference. The data in the study are consistent with the proposed model, but the model is not "proven" in that other models might provide an equal and even better fit (Cohen and Cohen, 1983).

Another limitation of the study is the low reliability estimates for the resource support and entrepreneurial focus measures. Since the Cronbach alphas are internal consistency estimates, future measurement development could focus on building the intercorrelations among the items in a measure, e.g., by increasing the item pool and factor analysis. Future validity and reliability tests will be necessary in order to demonstrate sufficient confidence in their psychometric properties.

Future Research

One potential avenue for future research is in resolving the results of this study with previous research. For example, entrepreneurial traits had a negative relationship with corporate level entrepreneurship, while organization size had a positive relationship. Resolution of these inconsistencies may be explained in general by differences in sample groups, but the underlying mechanism that is operating between these variables needs to be explored.

Longitudinal, field research is needed to support the causal inferences among the variables in the proposed framework. For example, the chief executive officer may influence organizational characteristics and strategy, but one could also posit a reciprocal relationship. In addition, understanding the role of organizational stages of growth in corporate level entrepreneurship might reveal whether the determinants of corporate level entrepreneurship vary over time. Questions concerning how the chief executive is selected and impacted by organizational characteristics are potential research questions--the answer to which may require more sophisticated theoretical models.

Since corporate level entrepreneurship was associated with a decentralized organizational structure, it may be appropriate to examine the personality characteristics of those individuals who initiate strategic change. Such research might overlap with the research being conducted in corporate ventures and organizational change.

A final area that could prove fruitful to understanding strategic change is the investigation of other variables not specified in the

present framework. Other organizational characteristics and personality traits of the chief executve, as well as environmental characteristics and relevant chief executive skills and behaviors could be important determinants of corporate level entrepreneurship. The possibility of a third variable explanation was suggested earlier to account for the relationship between centralization and entrepreneurial focus, i.e., incorporating a greater number of individuals in strategic decision making. A related question is: does the chief executive influence the entrepreneurial focus of the strategic planning group by merely involving more managers in the decision making and/or attempting to directly influence group processes and decision making? Finally, performance data could be useful in evaluating the best fit or design of the situation for an organization. The complexity and potential interrelationships among these variables in studying corporate level entrepreneurship may also require a more sophisticated, multivariate approach and analysis.

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APPENDIXES

APPENDIX A

PILOT STUDY MEASURES

A-1. Measure of Corporate Level Entrepreneurship.

1. This organization's strategic plans entail a considerable shift into new product, new market, and/or new business areas.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

2. The strategic direction of this firm is oriented toward gradual, not bold, substantial change.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

3. The strategy formulated for this organization, at least initially, was unique in comparison to our competition.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

4. The main focus of our present strategy is to successfully capitalize on past, proven effective strategies.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

5. The present strategy of this organization illustrates an original, new solution to the analysis of the problems, opportunities, and needs of our present situation/environment compared to past strategies.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

A-2. Shortened Version of Hermans' (1970) Measure of Achievement Motivation.

1. Working is something:
_____I would rather not do.
_____I don't like doing very much.
_____I would rather do now and then.
_____I like doing very much.

2. At school they thought I was:
_____very diligent.
_____diligent.
_____not always so diligent.
_____rather easy going.
_____very easy going.

3. Other people think I:
_____work very hard.
_____work hard.
_____work pretty hard.
_____don't work very hard.
_____don't work hard.

4. I would find a life in which one wouldn't have to work at all:
_____ideal.
_____very pleasant.
_____pleasant.
_____unpleasant.
_____very unpleasant.

5. Shopping is something:
_____I like very much.
_____I like.
_____I don't like.
_____I hate.

6. When I am working, the demands I make upon myself are:
_____very high.
_____high.
_____pretty high.
_____not so high.
_____low.
_____very low.

7. I usually do:
_____much more than I resolved to do.
_____a bit more than I resolved to do.
_____a little less than I resolved to do.
_____much less than I resolved to do.

A-2. (Continued)

8. Work that requires great responsibility:
_____I would like to do very much.
_____I would only do if I was paid well.
_____I don't think I would be capable of doing.
_____is completely unattractive to me.

9. When doing something difficult:
_____I give it up very quickly.
_____I give it up quickly.
_____I give it up rather quickly.
_____I don't give up too soon.
_____I usually see it through.

10. I can work at something without getting tired for:
_____a very long time.
_____a long time.
_____not too long a time.
_____only a short time.
_____only a very short time.

11. When I begin something I:
_____never carry it to a successful conclusion.
_____seldom carry it to a successful conclusion.
_____sometimes carry it to a successful conclusion.
_____usually carry it to a successful conclusion.
_____always carry it to a successful conclusion.

Source: Hermans, H. J. M. A questionnaire measure of achievement motivation. Journal of Applied Psychology, 1970, 54, 353-363.

A-3. Modified Measure of Achievement Motivation.

General Directions: Please respond to each statement below by checking the one answer which best describes your personal belief.

1. Working is something:
_____I would rather not do.
_____I don't like doing very much.
_____I would rather do now and then.
_____I like doing very much.

2. At school they thought I was:
_____very diligent.
_____diligent.
_____not always so diligent.
_____rather easy going.
_____very easy going.

3. Other people think I:
_____work very hard.
_____work hard.
_____work pretty hard.
_____don't work very hard.
_____don't work hard.

4. I would find a life in which one wouldn't have to work at all:
_____ideal.
_____very pleasant.
_____pleasant.
_____unpleasant.
_____very unpleasant.

5. When I am working, the demands I make upon myself are:
_____very high.
_____high.
_____pretty high.
_____not so high.
_____low.
_____very low.

6. I usually do:
_____much more than I resolved to do.
_____a bit more than I resolved to do.
_____a little less than I resolved to do.
_____much less than I resolved to do.

A-3. (Continued)

7. Work that requires great responsibility:
_____I would like to do very much.
_____I would like to do.
_____I would only do if I was paid well.
_____I don't think I would be capable of doing.
_____is completely unattractive to me.

8. When doing something difficult:
_____I give it up very quickly.
_____I give it up quickly.
_____I give it up rather quickly.
_____I don't give up too soon.
_____I usually see it through.

9. I can work at something without getting tired for:
_____a very long time.
_____a long time.
_____not too long a time.
_____only a short time.
_____only a very short time.

10. When I begin something I:
_____never carry it to a successful conclusion.
_____seldom carry it to a successful conclusion.
_____sometimes carry it to a successful conclusion.
_____usually carry it to a successful conclusion.
_____always carry it to a successful conclusion.

Source: The questionnaire used here is a modified and shortened version from Hermans, H. J. M. A questionnaire measure of achievement motivation. Journal of Applied Psychology, 1970, 54, 353-363.

A-4. Measure of Locus of Control.

General Directions: Using the following 7-point scale, please respond to the questions listed below by placing the number you think is most appropriate on the space next to each item. This scale assesses your personal opinions. There are no "right" or "wrong" answers.

1 = Strongly Disagree
2 = Disagree
3 = Slightly Disagree
4 = Neutral
5 = Slightly Agree
6 = Agree
7 = Strongly Agree

_____ 1. When I get what I want it's usually because I worked hard for it.

_____ 2. When I make plans I am almost certain to make them work.

_____ 3. I prefer games involving some luck over games requiring pure skill.

_____ 4. I can learn almost anything if I set my mind to it.

_____ 5. My major accomplishments are entirely due to hard work and intelligence.

_____ 6. I usually don't make plans because I have a hard time following through on them.

_____ 7. Competition encourages excellence.

_____ 8. The extent of personal achievement is often determined by chance.

_____ 9. On any sort of exam of competition I like to know how well I do relative to everyone else.

_____10. Despite my best efforts I have few worthwhile accomplishments.

Source: Paulhus, D., and Christie, R. Spheres of control: An interactionist approach to assessment of perceived control. In H. M. Lefcourt (Ed.), Research with the Locus of Control Construct (Vol. 1). New York: Academic Press, 1981, 161-188.

A-5. Measure of Centralization.

1. The authority to commit resources into new products or markets is primarily at which of the following organizational levels:
_____Top executive.
_____Top executive/senior or corporate management.
_____Division managers or functional managers if no divisional structure.
_____Functional managers if divisional structure.
_____Middle level managers.

2. The responsibility for initiating changes in the strategic direction of the firm is generally done by the:
_____Top executive.
_____Top executive/senior or corporate management.
_____Division managers or functional managers if no divisional structure.
_____Functional managers if divisional structure.
_____Middle level managers.

3. The authority for approving entry into new markets/businesses is primarily located with the:
_____Top executive.
_____Top executive/senior or corporate management.
_____Division managers or functional managers if no divisional structure.
_____Functional managers if divisional structure.
_____Middle level managers.

4. The responsibility for strategic planning is generally at which of the following organizational levels:
_____Top executive.
_____Top executive/senior or corporate management.
_____Division managers or functional managers if no divisional structure.
_____Functional managers if divisional structure.
_____Middle level managers.

A-6. Measure of Resource Support.

General Directions: Please respond to the following questions by checking the one answer which best describes the climate which existed in the strategic planning group (i.e., those individuals directly under your span of control and staff specialists) when you last developed your most recent (e.g., annual) strategic plans.

1. Substantial capital existed, or could be obtained, for new projects and innovations into new business areas.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

2. Rewards in this organization are primarily tied to the development of new, long-term opportunities, rather than short-term financial performance.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

3. Failure for top management to develop successfully a new product or market opportunity is not really tolerated in this organization.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

4. Substantial executive and other needed personnel time and commitment existed, or could be obtained for new projects and innovations.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

A-7. Measure of Entrepreneurial Focus.

General Directions: Please respond to the following questions by checking the one answer which best describes the climate which existed in the strategic planning group (i.e., those individuals directly under your span of control and staff specialists) when you last developed your most recent (e.g., annual) strategic plans. Also, please check the one statement directly below which best characterizes planning in your organization.

_____This organization has a formal, annual planning cycle.
_____Planning in this organization is done primarily on an informal basis.

1. The planning process is characterized more by a commitment to the development of long-term opportunities than to internal problem solving and organizational efficiency.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

2. When analyzing our current situation, there is a strong emphasis placed on an active search for new opportunities.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

3. Decision making in the strategic planning group is primarily focused on immediate crisis resolution.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

4. Growth is a primary consideration in strategic planning sessions.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

A-7. (Continued)

5. There is a positive attitude toward change and creative solutions in the analysis of strategic alternatives.

_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

APPENDIX B

REVISIONS OF MEASURES FOR THE MAIN STUDY

B-1. Revised Measure of Corporate Level Entrepreneurship.

1. This organization's strategic plans entail a considerable shift into new product, new service, new market, and/or new business areas.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

2. The strategic direction of this firm is oriented toward gradual, not bold, substantial change.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

3. The strategy formulated for this organization, at least initially, was unique in comparison to our competition.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

4. The main focus of our present strategy is to successfully capitalize on past, proven effective strategies.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

5. The present strategy of this organization illustrates an original, new solution to the analysis of the problems, opportunities, and needs of our present situation/environment compared to past strategies.
_____strongly agree
_____agree
_____somewhat disagree
_____generally disagree
_____strongly disagree

B-2. Revised Measure of Achievement Motivation.

General Directions: Please respond to each statement below by checking the one answer which best describes your personal belief.

1. Working is something:
_____I would rather not do.
_____I don't like doing very much.
_____I would rather do now and then.
_____I like doing very much.

2. Other people think I:
_____work very hard.
_____work hard.
_____work pretty hard.
_____don't work very hard.
_____don't work hard.

3. I would find a life in which one wouldn't have to work at all:
_____ideal.
_____very pleasant.
_____pleasant.
_____unpleasant.
_____very unpleasant.

4. When I am working, the demands I make upon myself are:
_____very high.
_____high.
_____pretty high.
_____not so high.
_____low.
_____very low.

5. I usually do:
_____much more than I resolved to do.
_____a bit more than I resolved to do.
_____a little less than I resolved to do.
_____much less than I resolved to do.

6. Work that requires great responsibility:
_____I would like to do very much.
_____I would like to do.
_____I would only do if I was paid well.
_____I don't think I would be capable of doing.
_____is completely unattractive to me.

B-2. (Continued)

7. When doing something moderately difficult:
_____I give it up very quickly.
_____I give it up quickly.
_____I give it up rather quickly.
_____I don't give up too soon.
_____I usually see it through.

8. I can work at something without getting tired for:
_____a very long time.
_____a long time.
_____not too long a time.
_____only a short time.
_____only a very short time.

9. When I begin something I:
_____never carry it to a successful conclusion.
_____seldom carry it to a successful conclusion.
_____sometimes carry it to a successful conclusion.
_____usually carry it to a successful conclusion.
_____always carry it to a successful conclusion.

10. Boys succeed their father as manager of the business because:
_____they want to enlarge and extend the business.
_____they are lucky their father is manager.
_____they can put their new views into practice.
_____this is the easiest way to earn a lot of money.

11. If I have not attained my goal and have not done a task well, then:
_____I continue to do my best to attain the goal.
_____I exert myself once again to attain the goal.
_____I find it difficult not to lose heart.
_____I'm inclined to give up.
_____I usually give up.

12. In general I am:
_____very strongly future-oriented.
_____strongly future-oriented.
_____not so strongly future-oriented.
_____not at all future-oriented.

13. For life's extra pleasures:
_____I usually have not time.
_____I often have not time.
_____I sometimes have too little time.
_____I usually have enough time.
_____I always have time.

B-2. (Continued)

14. I usually am:
_____very busy.
_____busy.
_____not so busy.
_____not busy.
_____not busy at all.

15. Organizing something:
_____I like doing very much.
_____I like doing.
_____I don't like doing very much.
_____I don't like doing at all.

16. I:
_____very often am bored.
_____often am bored.
_____sometimes am bored.
_____hardly ever am bored.
_____never am bored.

Source: The questionnaire used here is a modified and shortened version from Hermans, H. J. M. A questionnaire measure of achievement motivation. Journal of Applied Psychology, 1970, 54, 353-363.

B-3. Revised Measure of Centralization.

Which levels of management are usually responsible for APPROVING decisions of the following types? Please circle the appropriate number.

MIDDLE MANAGERS		FUNCTIONAL TOP MGRS IF DIVISIONAL STRUCTURE		DIVISIONAL MGRS OR FUNCTIONAL MGRS IF NO DIV'L STRUCTURE		TOPMOST LEVELS OF MANAGEMENT
1	2	3	4	5	6	7

_____1. Capital budgeting
_____2. New production introduction
_____3. Acquisition of firms
_____4. Pricing of major product lines
_____5. Entry into major new markets
_____6. Hiring and firing senior personnel

Which levels of management are usually responsible for INITIATING decisions of the following types? Please circle the appropriate number.

_____1. Capital budgeting
_____2. New production introduction
_____3. Acquisition of firms
_____4. Pricing of major product lines
_____5. Entry into major new markets
_____6. Hiring and firing senior personnel

Source: Miller, D., and Friesen, P. H. Innovation in conservative and entrepreneurial firms: Two models of strategic momemtum. Strategic Management Journal, 1982, 3, 1-25.

B-4. Revised Measure of Resource Support.

General Directions: Please respond to the following questions by checking the one answer which best describes the climate which existed in the strategic planning group (i.e., those individuals directly under your span of control and staff specialists) when you last developed your most recent (e.g., annual) strategic plans.

1. Substantial capital existed, or could be obtained, for new projects and innovations into new business areas.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

2. Managerial rewards in this organization are based on the development of long-term opportunities.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

3. Failure for top management to develop successfully a new product or market opportunity is not really tolerated in this organization.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

4. Substantial executive and other needed personnel time and commitment existed, or could be obtained for new projects and innovations.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

5. Promotions and managerial compensation are generally tied to short-term (e.g., annual) financial performance.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

B-5. Revised Measure of Entrepreneurial Focus.

General Directions: Please check the **one** answer below which best describes the climate which existed in the strategic planning group (i.e., those individuals directly under your span of control and staff specialists) when you last developed your most recent (e.g., annual) strategic plans.

1. When planning for the future, this organization is committed to and considers the development of a number of long-term opportunities.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

2. A primary focus of the planning process is directed toward internal problem solving and organizational efficiency.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

3. Long-term forecasting of internal (e.g., sales) and external (e.g., inflation) trends is very important in determining the strategic direction of this organization.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

4. When analyzing our current situation, there is a strong emphasis placed on an active search for new opportunities.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

5. Decision making in the strategic planning group is primarily focused on immediate crisis resolution.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

B-5. (Continued)

6. Growth is a primary consideration in strategic planning sessions.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

7. There is a positive attitude toward change and creative solutions in the analysis of strategic alternatives.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

8. Most of the strategic planning in this organization is accomplished in a formal annual planning session.
_____strongly agree
_____agree
_____undecided
_____disagree
_____strongly disagree

APPENDIX C

POWER ANALYSIS

C-1. Power Analysis

$$L = \frac{R^2_{Y.A,B} - R^2_{Y.A}}{1 - R^2_{Y.A,B}} \times (N - u - w - 1)$$

$$8.08 = \frac{.26 - .13}{1 - .26} \times (51 - 1 - 3 - 1)$$

where: L = the noncentrality parameter: an L value of 8.00, with an alpha of .05 and u=1, yields a power of .81.

$R^2_{Y.A}$ = the proportion of variance in the dependent variable accounted for by a single independent variable.

$R^2_{Y.A,B}$ = the proportion of variance in the dependent variable accounted for by the remaining independent variables.

N = total sample size.

u = number of independent variables for $R^2_{Y.A}$ (i.e., one).

w = number of independent variables for $R^2_{Y.A.B}$ (i.e., three, since the largest regression model proposed in the hypotheses had four variables).

Source: Cohen, J. Statistical Power Analysis for the Behavioral Sciences. Revised ed. New York: Academic Press, 1977.

APPENDIX D

CORRESPONDENCE

D-1. Initial Cover Letter.

DEPARTMENT OF MANAGEMENT
College of Business Administration
The University of Tennessee
Knoxville, 37996-0545
Telephone: (615) 974-3161

April 27, 1985

Name, Title
Company
Street
City, State, Zip Code

Dear Mr. Name:

YOUR ASSISTANCE IS NEEDED! Understanding how organizations respond strategically is a complex and challenging problem. Unfortunately, we have only a sketchy idea of how the chief executive's personality and other aspects of the decision making environment may influence the strategic direction of the firm. We are conducting this study because we believe that the problems and challenges facing business firms in Tennessee will require new solutions. Insight into how organizations orient their strategic management process—and how these factors interplay—will enable us to make specific recommendations on how chief executive's traits and situational variables interact to determine an appropriate fit.

Your organization is one of a small number in which the chief executive is being asked to give information on this topic. You were selected from a random sample of businesses in the state of Tennessee. Your response is especially important because it concerns chief executive personality traits. Your organization is also important because it is essential that we have a range of organizational sizes represented in the study.

Based on the responses of a pilot study, the enclosed questionnaire should take about 15 minutes to complete. To thank you for your participation in this study, we have enclosed a copy of The Official MBA Handbook of Great Business Quotations that we hope you will find useful as well as humorous.

In keeping with the University of Tennessee guidelines, any information provided in this study is strictly confidential and will not be revealed to anyone in such a manner as to be associated with any particular individual or organization. The questionnaire has an identification number for mailing purposes only—so that we may check your name off the mailing list when your questionnaire is returned.

Please use the enclosed, self-addressed envelope to return the questionnaire. You may receive a summary of the results of this research by writing "copy of results requested" on the back of the return envelope and printing your name and address below it.

D-1. (Continued)

I would be most happy to answer any questions you might have. My telephone number is (615) 974-3161 at work or (615) 588-3094 at home. Or, if you prefer, I will be contacting you to answer any questions if I do not hear from you or receive your questionnaire within the next week or so.

Thank you very much for your time and valuable input. Your support of the University of Tennessee is appreciated.

Sincerely,

Laura L. Matherly,
Doctoral Candidate

Enclosures

D-2. Questionnaire.

QUESTIONNAIRE

Average Number of Full-Time Employees_____

Directions: Using the following 7-point scale, please respond to the questions listed below by placing the number you think is most appropriate on the space next to each item. This scale assesses your personal opinions. There are no "right" or "wrong" answers.

1 = Strongly Disgree
2 = Disagree
3 = Slightly Disagree
4 = Neutral
5 = Slightly Agree
6 = Agree
7 = Strongly Agree

_____ 1. When I get what I want it's usually because I worked hard for it.

_____ 2. When I make plans I am almost certain to make them work.

_____ 3. I prefer games involving some luck over games requiring pure skill.

_____ 4. I can learn anything if I set my mind to it.

_____ 5. My major accomplishments are entirely due to hard work and intelligence.

_____ 6. I usually don't make plans because I have a hard time following through on them.

_____ 7. Competition encourages excellence.

_____ 8. The extent of personal achievement is often determined by chance.

_____ 9. On any sort of exam of competition, I like to know how well I do relative to everyone else.

_____10. Despite my best efforts, I have few worthwhile accomplishments.

D-2. (Continued)

Directions: Please respond to each statement below by checking the one answer which best describes personal belief.

1. Working is something:
   ____I would rather not do
   ____I don't like doing very much
   ____I would rather do now and then
   ____I like doing
   ____I like doing very much

2. Other people think I:
   ____work very hard
   ____work hard
   ____work pretty hard
   ____don't work very hard
   ____don't work hard

3. I usually do:
   ____much more than I resolved to do
   ____a bit more than I resolved to do
   ____a little less than I resolved to do
   ____much less than I resolved to do

4. When doing something moderately difficult:
   ____I give it up very quickly
   ____I give it up quickly
   ____I give it up rather quickly
   ____I don't give up too soon
   ____I usually see it through

5. Work that requires great responsibility:
   ____I would like to do very much
   ____I would only do if I was paid well
   ____I don't think I would be capable of doing
   ____is completely unattractive to me

6. Boys succeed their father as manager of the business because:
   ____they want to enlarge and extend the business
   ____they are lucky their father is manager
   ____they can put their new views into practice
   ____this is the easiest way to earn a lot of money

7. When I begin something I:
   ____never carry it to a successful conclusion
   ____seldom carry it to a successful conclusion
   ____sometimes carry it to a successful conclusion
   ____usually carry it to a successful conclusion
   ____always carry it to a successful conclusion

8. If I have not attained my goal and have not done a task well, then:
   ____I continue to do my best to attain the goal
   ____I exert myself once again to attain the goal
   ____I find it difficult not to lose heart
   ____I'm inclined to give up
   ____I usually give up

9. I would find a life in which one wouldn't have to work at all:
   ____ideal
   ____very pleasant
   ____pleasant
   ____unpleasant
   ____very unpleasant

10. When I am working, the demands I make upon myself are:
   ____very high
   ____high
   ____not so high
   ____low
   ____very low

11. In general I am:
   ____very strongly future-oriented
   ____strongly future-oriented
   ____not so strongly future-oriented
   ____not at all future-oriented

12. For life's extra pleasures:
   ____I usually have no time
   ____I often have no time
   ____I sometimes have too little time
   ____I usually have enough time
   ____I always have time

13. I usually am:
   ____very busy
   ____busy
   ____not so busy
   ____not busy
   ____not busy at all

14. I can work at something without getting tired for:
   ____a very long time
   ____a long time
   ____not too long a time
   ____only a short time
   ____only a very short time

15. Organizing something:
   ____I like doing very much
   ____I like doing
   ____I don't like doing very much
   ____I don't like doing at all

16. I:
   ____very often am bored
   ____often am bored
   ____sometimes am bored
   ____hardly ever am bored
   ____never am bored

D-2. (Continued)

Directions: Please check the one answer below which best describes the climate which existed in the strategic planning group (i.e., those individuals directly under your span of control and staff specialists) when you last developed your most recent (e.g., annual) strategic plans.

	STRONGLY AGREE	AGREE	UN-DECIDED	DIS-AGREE	STRONGLY DISAGREE
1. When planning for the future, this organization is committed to and considers the development of a number of long-term opportunities.	____	____	____	____	____
2. A primary focus of the planning process is directed toward internal problem solving and organizational efficiency.	____	____	____	____	____
3. Long-term forecasting of internal (e.g., sales) and external (e.g., inflation) trends is very important in determining the strategic direction of this organization.	____	____	____	____	____
4. When analyzing our current situation, there is a strong emphasis placed on an active search for new opportunities.	____	____	____	____	____
5. Decision making in strategic planning is often focused on immediate crisis resolution.	____	____	____	____	____
6. High growth (e.g., in sales and profits) is a primary consideration in strategic planning sessions.	____	____	____	____	____
7. There is a positive attitude toward change and creative solutions in the analysis of strategic alternatives.	____	____	____	____	____
8. Most of the strategic planning in this organization is accomplished in a formal, annual planning session.	____	____	____	____	____
9. Substantial capital existed, or could be obtained, for new projects and innovations into new business areas.	____	____	____	____	____
10. Managerial rewards in this organization are based on the development of long-term opportunities.	____	____	____	____	____
11. Failure for top management to develop successfully a new product or market opportunity is not really tolerated in this organization.	____	____	____	____	____
12. Substantial executive and other needed personnel time and commitment existed, or could be obtained for new projects and innovations.	____	____	____	____	____
13. Promotions and managerial compensation are generally tied to short-term (e.g., annual) financial performance.	____	____	____	____	____

D-2. (Continued)

	STRONGLY AGREE	AGREE	SOMEWHAT DISAGREE	GENERALLY DISAGREE	STRONGLY DISAGREE
1. This organization's strategic plans entail a considerable shift into new product, new service, new market, and/or new business areas.	____	____	____	____	____
2. The strategic direction of this firm is oriented toward gradual, not bold, substantial change.	____	____	____	____	____
3. The strategy formulated for this organization, at least initially, was unique in comparison to our competition.	____	____	____	____	____
4. The main focus of our present strategy is to successfully capitalize on past, proven effective strategies.	____	____	____	____	____
5. The present strategy of this organization illustrates an original new solution to our problems, opportunities, and needs compared to past strategies.	____	____	____	____	____

Which levels of management are usually responsible for <u>APPROVING</u> decisions of the following types? Please circle the appropriate number.

	MIDDLE MANAGERS		FUNCTIONAL TOP MGRS IF DIVISIONAL STRUCTURE		DIVISIONAL MGRS OR FUNCTIONAL MGRS IF NO DIV'L STRUCTURE		TOPMOST LEVELS OF MANAGEMENT
Capital budgeting	1	2	3	4	5	6	7
New production introduction	1	2	3	4	5	6	7
Acquisition of firms	1	2	3	4	5	6	7
Pricing of major product lines	1	2	3	4	5	6	7
Entry into major new markets	1	2	3	4	5	6	7
Hiring and firing senior personnel	1	2	3	4	5	6	7

Which levels of management are usually responsible for <u>INITIATING</u> decisions of the following types? Please circle the appropriate number.

Capital budgeting	1	2	3	4	5	6	7
New production introduction	1	2	3	4	5	6	7
Acquisition of firms	1	2	3	4	5	6	7
Pricing of major product lines	1	2	3	4	5	6	7
Entry into major new markets	1	2	3	4	5	6	7
Hiring and firing senior personnel	1	2	3	4	5	6	7

D-3. Revised Cover Letter.

DEPARTMENT OF MANAGEMENT
College of Business Administration
The University of Tennessee
Knoxville, 37996-0545
Telephone: (615) 974-3161

May 10, 1985

Name, Title
Company
Street
City, State, Zip Code

Dear Mr. Name:

YOUR ASSISTANCE IS NEEDED! Understanding how organizations respond strategically is a complex and challenging problem. Unfortunately, we have only a sketchy idea of how the chief executive's personality and other aspects of the decision making environment may influence the strategic direction of the firm.

Your organization is one of a small number in which the chief executive is being asked to give information on this topic. You were selected from a random sample of businesses in the state of Tennessee. Your response is especially important because it concerns chief executive personality traits. Your organization is also important because it is essential that we have a range of organizational sizes represented in the study. Based on the responses of a pilot study, the enclosed questionnaire should take about 15 minutes to complete.

In keeping with the University of Tennessee guidelines, any information provided in this study is strictly confidential and will not be revealed to anyone in such a manner as to be associated with any particular individual or organization. The questionnaire has an identification number for mailing purposes only—so that we may check your name off the mailing list when your questionnaire is returned.

Please use the enclosed, self-addressed envelope to return the questionnaire. You may receive a summary of the results of this research by writing "copy of results requested" on the back of the return envelope and printing your name and address below it.

I would be most happy to answer any questions you might have. My telephone number is (615) 974-3161 at work or (615) 588-3094 at home. Thank you very much for your time and valuable input. Your support of the University of Tennessee is appreciated.

Sincerely,

Laura L. Matherly,
Doctoral Candidate

Enclosures

D-4. Correspondence 1.

DEPARTMENT OF MANAGEMENT
College of Business Administration
The University of Tennessee
Knoxville, 37996-0545
Telephone: (615) 974-3161

May 10, 1985

Name, Title
Company
Address
City, State, Zip Code

Dear Mr. Name:

Thank you very much for responding to the questionnaire survey I sent you a week or so ago. However, a very strange thing has happened. I received the return envelope, but there was nothing in it! The flap on the envelope was open and perhaps the questionnaire fell out somewhere going through the mail.

Anyway, I was hoping that you would be kind enough to fill out another questionnaire. I have enclosed a questionnaire and a return envelope.

As soon as I have received the results of the survey, I will send you a copy of the results. Thank you again for your cooperation.

Sincerely,

Laura L. Matherly

Laura L. Matherly
Doctoral Candidate

Enclosure

D-5. Correspondence 2.

DEPARTMENT OF MANAGEMENT
College of Business Administration
The University of Tennessee
Knoxville, 37996-0545
Telephone: (615) 974-3161

May 10, 1985

Name, Title
Company
Address
City, State, Zip Code

Dear Mr. Name:

Thank you for responding to the questionnaire I sent you two weeks ago. I did receive the questionnaire, but when I examined it, I discovered that the first two pages were not filled out. I was hoping you would be kind enough to answer these questions and have enclosed the questionnaire and a return envelope. The first two pages of the questionnaire both concern chief exective officer's traits so I really will appreciate your personal input to the study.

I must tell you that I have long been an admirer of you and your success with "Company". I received my M.B.A. from Memphis State University in 1976 and while I was there I had the opportunity to hear you speak to the M.B.A. students. You conveyed a lot of enthusiasm, and I thought the history of your company illustrated an exciting entrepreneurial success story.

I look forward to hearing from you soon and please feel free to call me at (615) 588-3094 if you have any questions.

Sincerely,

Laura L. Matherly

Laura L. Matherly
Doctoral Candidate

Enclosures

D-6. Correspondence 3.

DEPARTMENT OF MANAGEMENT
College of Business Administration
The University of Tennessee
Knoxville, 37996-0545
Telephone: (615) 974-3161

May 10, 1985

Name, Title
Company
Address
City, State, Zip Code

Dear Mr. Name:

Thank you for responding to the questionnaire survey I sent you two weeks ago. I did receive the questionnaire, but when I examined it, I discovered that the last two pages were incomplete. I was hoping you would be kind enough to complete these pages and have enclosed the questionnaire as well as a return envelope.

I really appreciate your time and valuable input to this research. Please feel free to contact me at (615) 588-3094 if you have any questions.

Sincerely,

Laura L. Matherly

Laura L. Matherly
Doctoral Candidate

Enclosure

APPENDIX E

SAMPLE SIC CODES

E-1. Sample SIC Codes Arranged in Ascending Order.

1522	1796	2329	2652	3599	5013	5161	5944	6211
1522	2011	2329	2771	3599	5021	5172	5946	6311
1541	2048	2329	2873	3634	5023	5191	5961	6311
1541	2051	2337	2874	3714	5031	5198	6022	6311
1541	2065	2339	2879	3811	5039	5199	6022	6321
1541	2111	2339	3069	3949	5064	5199	6022	6531
1541	2211	2392	3079	3951	5072	5211	6022	6552
1542	2253	2399	3143	3952	5072	5311	6022	6711
1542	2254	2431	3144	4212	5074	5311	6025	6711
1542	2259	2449	3149	4214	5081	5399	6025	6711
1542	2271	2511	3325	4221	5082	5541	6025	6711
1611	2281	2511	3362	4225	5083	5661	6025	7011
1622	2283	2512	3369	4411	5084	5719	6025	7011
1623	2311	2642	3429	4511	5084	5812	6025	7011
1623	2311	2648	3441	4583	5084	5812	6123	7538
1629	2322	2649	3442	4712	5085	5812	6145	7699
1629	2328	2649	3443	4811	5133	5812	6162	8911
1711	2328	2649	3599	4811	5139	5941	6163	8911
1761								

VITA

Laura Lee Matherly was born in Johnson City, Tennessee on December 1, 1953. She attended elementary and junior high schools in that city and was graduated from Science Hill High School in June 1971. She graduated with a Bachelor of Science in Business Administration in June 1975 from The University of Tennessee, Knoxville. In May 1976 she received a Master of Business Administration degree from Memphis State University.

After working in sales with Johnson & Johnson, Health Care Division and as a business instructor at Steed College in Kingsport, Tennessee, she entered the doctoral program at The University of Tennessee, Knoxville. She served as a graduate teaching assistant in Marketing for one year, in Industrial/Organizational Psychology for two years, and in Strategic Management for a year and a half. In December 1985 she received the Doctor of Philosophy degree with a major in Strategic Management.

The author is a member of Beta Gamma Sigma, Phi Kappa Phi, and the Academy of Management. Ms. Matherly will be employed as a consultant and researcher with Tennessee Associates, Inc. in Alcoa, Tennessee after graduation.