

AN INVESTIGATION OF ENTREPRENEURIAL CHARACTERISTICS BASED
ON THE MYERS-BRIGGS TYPE INDICATOR

by

JOHN WILLIAM CUMING

B.A., Tufts University
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Submitted to the Sloan School of Management
in Partial Fulfillment of
the Requirements of the Degree of
Master of Science in Management

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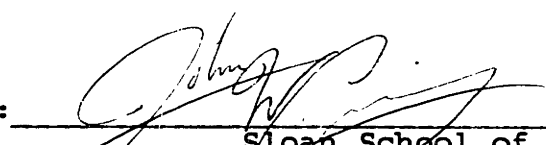
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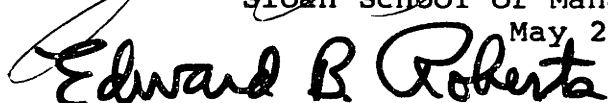
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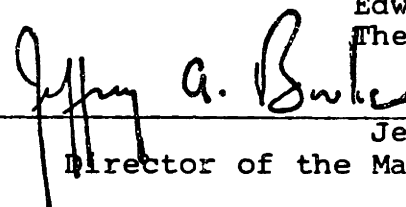
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Certified by: _____



Edward B. Roberts
Thesis Supervisor

Accepted by: _____



Jeffrey A. Barks
Director of the Master's Program

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ABSTRACT

An analysis of the psychological characteristics of entrepreneurs is conducted using a shortened version of the Myers-Briggs Type Indicator, a standardized psychological test which is designed to determine personality types in individuals. A questionnaire containing this test was administered to attendees of meetings of the MIT Enterprise Forum and the 128 Venture Group. The resulting data is analyzed to determine a) if individuals with entrepreneurial tendencies display personality characteristics distinct from those of the general population; and b) if successful entrepreneurs display personality characteristics distinct from those of unsuccessful entrepreneurs. The results of the analysis indicate that both "generic" and technical entrepreneurs display particular personality characteristics. However, no significant conclusions can be reached as to critical success factors.

In addition to discussing the above survey, prior research in the field of entrepreneurial characteristics is reviewed. This discussion first examines the psychological, sociological, and personal characteristics of entrepreneurs. It then presents those characteristics which differentiate successful entrepreneurs from unsuccessful entrepreneurs, technical entrepreneurs from non-technical entrepreneurs, and spinoff entrepreneurs from internal entrepreneurs.

Thesis Supervisor: Dr. Edward B. Roberts
Title: David Sarnoff Professor of Management Technology

To my parents

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Chapter I: Introduction

America has long been the land of the entrepreneur. It was born of an entrepreneur - Christopher Columbus - who, with his venture capital backer, Queen Isabella, developed a strategic plan to exploit business opportunities in distant lands. Isabella's investment in Columbus paid off handsomely - Spain gained a dominant hold on new world markets well ahead of its competitors. For Columbus, the tale was less happy. A poor manager, Columbus was replaced in 1499 as administrator of the Indies and died several years later, frustrated, humiliated and looking for work.

From the ships of Columbus to the garages of Silicon Valley, America's economic engine has for centuries been thrust forward by the efforts of entrepreneurs large and small. Today, however, there is a new breed of entrepreneur - well-schooled, well-financed and born into comfort, if not affluence. The new entrepreneur is not an inventor like Eli Whitney nor an industrial visionary like Henry Ford. He is neither the immigrant shunned by the corporate world nor the strident iconoclast. Rather, young people by the droves - refugees from corporate life, career-minded housewives and the cream of the business school elite - are turning their backs on giant corporations and going it alone. In doing so, they have pushed forth America's inventive edge and are restoring vitality to an economy that, far too often in recent years, seemed to have lost its competitive might.¹

The above quote from a recent issue of the Sunday New York Times is an example of the media attention which has been paid recently to the growth of entrepreneurship in the United States. Indeed, this growth has been significant: some eight million people are now self-employed in this country, an all-time high and a figure that has climbed by

v

one million in just two years. Furthermore, approximately 800,000 to one million new companies are formed each year, and so the number of entrepreneurs is constantly increasing. These new entrepreneurs come from a variety of educational and social backgrounds: they range from the business school graduate with millions in venture capital to the small town proprietor of the "Mom and Pop" variety store. Their level of success also varies, from the youthful multimillionaires such as Apple Computer's Steven Jobs and Stephen Wozniak to the hundreds of thousands of entrepreneurs whose businesses fail each year.

In order to finance this entrepreneurial "boom", venture capital funds have also been growing at an impressive rate: last year, the pool of available funds reached a record \$11.5 billion, according to Venture Capital Journal, a trade publication. This compares with a pool of only \$6 billion in December 1981. This increase in venture capital funds acts as an incentive for some to become entrepreneurs, thereby creating a self-perpetuating trend. Today there are some 1,000 venture capital funds in existence.

The rise in entrepreneurship has altered the employment profile of the American economy. Since the late 1970s, small businesses have dramatically outperformed the Fortune 1,000 companies in terms of providing jobs. Between 1977 and 1982, companies too small to make the Fortune 1,000 pro-

vided 8.6 million new jobs, while Fortune 1,000 firms lost 1.5 million jobs during that time.

As mentioned earlier, entrepreneurship is of course not a new phenomenon: it has been with us since the days of Columbus and is in fact a very important part of our society. Karl H. Vesper, professor of entrepreneurship at the University of Washington, says of his field of study, "There's a latent lust for it in all of us - it's the American way."² Indeed, the role of the entrepreneur seems to enjoy status derived from traditional prestige values of independence and self-sufficiency as well as traditional concepts of the "good life". However, the history of entrepreneurship is marked by a series of peaks and valleys. The "golden age of entrepreneurship" occurred at the end of the nineteenth century, when America shifted from an agrarian to an industrial economy. This shift was largely facilitated by the efforts of a handful of entrepreneurs who built the steel, oil, auto, and chemical empires. However, entrepreneurial activity waned considerably during the two world wars, which put limits on many forms of economic growth, and the Great Depression.

What has brought about this current increase in the "pioneer spirit" in business? Several factors are at work, the most important of which are the following:

- . The rapid pace of technological change in recent years, most particularly in computers and communications. As

Alfred D. Chandler, Jr., the Isidor Straus Professor of Business History at the Harvard Business School, says, "Society is quicker, more mobile, bigger and more urban. This growth, combined with new technologies, has given the entrepreneur opportunities that simply weren't there prior to World War II."³

- . The poor performance of the more mature industries in recent years, which has made it difficult for sharp thinkers to attain their desired standard of living and has therefore spurred their exodus to the new growth areas mentioned above.
- . The cut in capital gains tax rates in 1978, which greatly increased the attractiveness of venture capital investments.
- . The maturation of the baby-boom generation. The generation which grew up during the Depression developed a great desire for security which it saw as embodied in the large corporation. However, the baby-boom generation, which grew up during the turmoil and idealism of the 1960s and Watergate, has developed a dislike of big institutions and a resultant desire to express themselves in an independent way. As a result, much of this generation has turned to entrepreneurship and has in fact turned the entrepreneur into a new kind

of cultural hero. "Young in age, if not in spirit, many entrepreneurs are trying to translate the search for excitement, stimulation and newness of the 1960's into the entrepreneurial environment of the 1980's."4

- . The entry of women in the work force. Women are often attracted to entrepreneurship for two reasons: 1) They often feel discriminated against within the corporation; and 2) they sometimes lack the credentials to get a good job. Charlotte Taylor, president of a Washington, D.C. consulting firm, says, "For many women, ownership is the fastest track to the economic mainstream."5

The above are some of the reasons behind the current growth in entrepreneurship on a macro level. However, this paper centers around the causal factors of entrepreneurial activity on a micro level; more specifically, it reports on the results of a study to determine the psychological characteristics of entrepreneurs and individuals with entrepreneurial tendencies. Before discussing this study, however, let us first review the prior research which has been done in the area of entrepreneurial characteristics.

Chapter II: Review of Prior Research

A. Introduction

Academic research in the area of entrepreneurship is extensive. The purpose of much of the research has been to determine characteristics which distinguish entrepreneurs from the rest of the population. Research into the area of entrepreneurial characteristics is useful, if one accepts the following reasoning. First, there appears to be some correlation between economic growth and business formations. Furthermore, entrepreneurial profits are a very important source of risk capital in any advanced industrialized society, which means that entrepreneurs play a role in the technological advancement of a society. Therefore, it appears clear that an increase in the number of entrepreneurs is good for a society economically. The question then becomes: How does a society increase its supply of entrepreneurs? One way is through education: Empirical evidence suggests that traits associated with entrepreneurial activities and entrepreneurial success can be inculcated. However, before educational methods designed to upgrade entrepreneurial skills can be developed, the characteristics associated with entrepreneurs (and especially successful entrepreneurs) must be identified.

Two schools of thought exist with respect to the moti-

vation to become an entrepreneur. The first claims that psychological factors are the most important entrepreneurial motivator. The second says that sociological factors are key and that efforts to define psychological characteristics are addressing the symptom rather than the cause. Before we examine the evidence in favor of each of these "camps", let us first examine the many and varied attempts that have been made to define the entrepreneur.

B. Definition of the Entrepreneur

Before any researcher can even begin to conduct any meaningful research in the area of entrepreneurship, he first has to define the subject of his research: the entrepreneur. Unfortunately, however, an entrepreneur is not like a butcher or an auto mechanic, whose responsibilities are relatively clear-cut; there is a great deal of room for interpretation in terms of defining an entrepreneur's activities. For instance, is a child selling lemonade on a street corner an entrepreneur? What about a production manager in the Soviet Union? Researchers have debated at length over questions such as these, and so it is not surprising that we find the widely-varying definitions of entrepreneurship alluded to above.

Adding to the confusion is the fact that entrepreneurship is a concept that is not encompassed by any single

academic discipline but is nevertheless of interest to many of them. Therefore, academic definitions of entrepreneurship tend to vary according to the theoretical structures of the discipline with which the researcher is primarily associated.

Despite the lack of a standard definition of entrepreneurship, the definitions in the literature are alike in that all (or, at least, most) of them are functional or retrospective. In other words, an individual is not recognized as an entrepreneur until after he has performed the actions required by the definition. Among the nouns that have most commonly been used to describe entrepreneurs are "innovator," "risk-taker," "decision-maker," and "coordinator of resources."

As implied earlier, the quality that most distinguishes the various definitions of entrepreneurs is exclusivity. Some definitions of entrepreneurs are quite broad and inclusive; others are quite specific in identifying the types of activities that qualify as "entrepreneurial." One of the most important issues is the question of how innovative an individual must be in order to qualify as an entrepreneur. Joseph Schumpeter, a pioneer in the field of entrepreneurship research, felt that an individual had to be very innovative; in fact, he went so far as to define the entrepreneur as an innovator in the sense of recognizing the

value of ideas and exploiting them (1934). To him, the entrepreneur's activities could include the introduction of a new good, the introduction of a new method of production, the opening of a new market, the discovery of a new source of raw materials, or the reorganization of an industry. In his literature, he emphasized dramatic innovations that fostered long-run economic growth.

While Joseph Schumpeter's views represent one extreme of the innovativeness spectrum, Albert Shapero and his concept of the "entrepreneurial event" represent the other extreme. (We will discuss this concept later on in this chapter.) Shapero (1982) asserts that the creation of a new venture is by definition the innovation, and so no more innovation is necessary in order to qualify an individual as an entrepreneur. (In other words, Shapero feels that the kid with the lemonade stand is an entrepreneur.)

Of course, most other researchers have views which fall in between these two extremes, but the popular usage of the term falls closer to Shapero's end. Schumpeter's view is in fact a bit outdated because of historical changes in the advanced capitalist countries: our economies are no longer dominated by the nineteenth century industrial barons, who were, to Schumpeter, the prototypical entrepreneurs. Smith (1967) proposed a compromise of sorts on this issue by dividing the entrepreneur into two types: the Craftsman-

Entrepreneur and the Opportunistic-Entrepreneur. Hornaday and Bunker (1970) later found the former to be characterized by a limited cultural background and a limited social involvement and the latter by a broader educational background, broader social involvement, and a more aggressive approach to long-range development and expansion.

Another important issue is the question of the proper setting for entrepreneurial activity. Again, Schumpeter represents one extreme on this issue. To him, the entrepreneur is solely a product of the advanced capitalist economies (1947). Max Weber, who felt that the Protestant work ethic played a key role in the development of entrepreneurship, held views which were similar to Schumpeter's.

Today, Schumpeter's and Weber's views are rather unrealistic. There is little debate about the fact that even though their activities are quite different from those of the nineteenth century business tycoon, entrepreneurs are today a part of underdeveloped and even centrally-planned economies. Accordingly, much of the entrepreneurial research going on today takes place in these economies. However, some academicians have taken the question of entrepreneurial setting to the opposite extreme. David McClelland, one of the most frequently quoted writers on the subject of entrepreneurship, defines the entrepreneur very broadly:

I am not using the term "entrepreneur" in the sense of "capitalist": in fact, I should like to divorce "entrepreneur" entirely from any connotations of ownership. An entrepreneur is someone who exercises control over production that is not just for his personal consumption. According to my definition, for example, an executive in a steel-production unit in the U.S.S.R. is an entrepreneur.⁶

Related to the above issue of entrepreneurial setting is the debate over whether or not an entrepreneur must have a profit stake in the outcome of the venture. One end of the spectrum is once again represented by Joseph Schumpeter, among others. He viewed a stake in the financial outcome of a venture as a most necessary element in the definition of an entrepreneur. Weber (1917) similarly distinguished the entrepreneur from the manager by defining the entrepreneur as the ultimate source of all formal authority within an organization. Arthur D. Chandler, Jr. and Fritz Redlich (1961) developed a three-tiered model of corporate administrative structures. Chandler (1979) restricted entrepreneurial functions to the top level, to only those executives who control capital allocations and long-range strategy. Obviously, McClelland, who categorizes some communists as entrepreneurs, represents the other extreme. However, even some who restrict their attention to the advanced capitalist countries believe that an individual can be an entrepreneur without profit motivation. Edward Roberts has done considerable research in the area of "internal entrepreneur-

ship", or the creation of new product ventures or new technology divisions in existing companies. (We will return to the subject of internal entrepreneurship in more detail later on in this chapter.)

One quality which most contemporary writers agree entrepreneurs possess is risk-taking, which is related to decision-making under conditions of uncertainty. However, there is controversy surrounding the issue of how much risk an entrepreneur bears relative to non-entrepreneurs. For example, J.S. Mill (1848), who is credited with bringing the term "entrepreneur" into general use among economists, felt that risk-bearing is what distinguishes the entrepreneur from the manager, whereas Schumpeter (1954) placed less emphasis on risk since he believed that both entrepreneurs and managers are subject to the risk of failure. However, just about every definition of the entrepreneur either implicitly or explicitly includes decision-making under uncertainty. (The issue of the risk-taking propensity of the entrepreneur will be discussed more fully later in this chapter.)

It is clear, then, that entrepreneurship is not a well-defined concept in academic circles, although there appears to be little disagreement over the fact that entrepreneurship is a management-oriented activity that involves decision-making, risk-taking, resource aggregation, and ini-

tiative. Because of the definitional problems that do exist, however, research findings on entrepreneurial characteristics are often difficult to compare, thereby making generalization a dangerous practice. Nevertheless, some psychological characteristics have been reported in a relatively consistent manner, as we shall now see.

C. Psychological Characteristics

A major area of research in the effort to understand entrepreneurial motivation and behavior is psychological characteristics. Table 1 lists the psychological characteristics that were found by several researchers to be associated with entrepreneurial behavior. The following paragraphs describe some of the psychological influences that have been found to be most closely associated with entrepreneurs.

1. Need for Achievement. The research literature points out that the psychological factor most closely associated with entrepreneurship or idea exploitation is need for achievement. The individual who has done by far the most important work on the effect of achievement motivation on entrepreneurial behavior is David McClelland. McClelland (1961) characterizes individuals with high need for achievement (nAch) as those preferring to be personally responsible for solving problems, setting goals, and reaching those

Table 1

Characteristics Often Attributed to the Entrepreneur

Characteristics	Reference source						
	SBA	H&B	IIM (a)	EWC Workshop	INED	Akhouri	IIM (b)
1. Confidence	x	x	x	x	x	x	x
2. Perseverance, determination	x	x	x	x	x		
3. Energy, diligence	x	x	x	x	x	x	x
4. Resourcefulness	x	x	x	x	x		
5. Ability to take calculated risks		x	x	x	x	x	x
6. Dynamism, leadership	x	x	x	x			
7. Optimism	x		x	x			x
8. Need to achieve	x	x	x	x		x	
9. Versatility; knowledge of product, market, machinery, technology	x	x	x	x			x
10. Creativity	x	x	x	x		x	
11. Ability to influence others	x	x	x				
12. Ability to get along well with people	x	x	x				x
13. Initiative	x	x	x	x	x		
14. Flexibility		x	x			x	x
15. Intelligence	x		x				
16. Orientation to clear goals			x	x	x		
17. Time-competence, efficiency			x	x		x	
18. Ability to make decisions quickly			x	x			
19. Positive response to challenges			x	x	x	x	
20. Independence	x	x	x	x		x	
21. Honesty, integrity	x		x				
22. Maturity, balance	x		x				
23. Responsiveness to suggestions and criticism	x		x	x	x		x

Table 1 (Cont'd)

Characteristics Often Attributed to the Entrepreneur

Characteristics	Reference source						
	SBA	H&B	IIM (a)	EWC Workshop	INED	Akhouri	IIM (b)
24. Responsibility				x	x		
25. Foresight	x		x	x		x	x
26. Accuracy, thoroughness	x		x				
27. Cooperativeness	x		x				
28. Profit-orientation		x	x	x	x		
29. Ability to learn from mistakes				x	x	x	
30. Sense of power				x		x	
31. Pleasant personality	x			x			
32. Egotism				x			x
33. Courage	x			x			
34. Imagination	x			x			x
35. Perceptiveness		x		x		x	
36. Toleration for ambiguity				x		x	
37. Aggressiveness	x			x			
38. Capacity for enjoyment				x		x	
39. Efficacy	x				x		
40. Commitment	x			x	x		x
41. Ability to trust workers	x					x	
42. Sensitivity to others				x		x	

Abbreviations and references:

SBA	Hal B. Pickle, <i>Personality and Success: An Evaluation of Personal Characteristics of Successful Small Business Managers</i> . Washington D.C.: U.S. Small Business Administration, 1964.
H&B	J. Hornaday and C. Bunker, "The Nature of the Entrepreneur," <i>Personnel Psychology</i> 23, No. 1 (1970), 47-54.
IIM (a,b)	Indian Institute of Management, Studies 1 and 2 as cited in Appendix B.
EWC Workshop	East-West Center Technology and Development Institute, <i>Entrepreneur Curriculum Development Workshop</i> , August 1976.
INED	Institute for New Enterprise Development, <i>New Venture Creation</i> , by Timmons, Smollen, and Dingee, p. 37.
Akhouri	See citation in Appendix B.

Source: Calvin A. Kent, Donald L. Sexton and Karl H. Vesper, eds., Encyclopedia of Entrepreneurship (Englewood Cliffs: Prentice-Hall, Inc., 1982).

goals by their own efforts. Such persons also have a strong desire to know how well they are accomplishing their tasks. (Such feedback might be in the form of number of pieces produced or profit per item.) McClelland's hypothesis was that entrepreneurs have high nAch because they demonstrate the above characteristics, and he tested this hypothesis in several major studies. These studies confirmed McClelland's hypothesis and further showed that high nAch is a contributing factor to entrepreneurial behavior.

Since the time of McClelland's pioneering research into achievement motivation, other researchers have added to the body of knowledge concerning this psychological characteristic. For example, people with high achievement motivation, relative to those with low, are characterized by:

- . preferring tasks involving some objective risks concerning the success of the task;
- . working harder at tasks requiring mental manipulation and innovation;
- . not working harder under the influence of monetary reward;
- . performing better under conditions where feedback is positive;
- . long-range thinking.

People with high nAch are attracted to entrepreneurship because entrepreneurial activity is capable of satisfying

high nAch individuals.

McClelland feels that need for achievement is the only factor differentiating entrepreneurs from the rest of society. Since, as was stated earlier, there appears to be some correlation between economic growth and entrepreneurial activity, McClelland hypothesized that need for achievement is the psychological factor which engenders economic growth and decline. Later on, we will examine a 1967 study by Herbert Wainer and Irwin Rubin which attempted to test this theory.

It is important to keep in mind, while considering McClelland's research on the relationship between need for achievement and entrepreneurial behavior, that his definition of the entrepreneur is very inclusive. (See the previous section.) For this reason, some have downplayed the implications of his research in terms of entrepreneurial motivation.

2. Locus-of-Control Beliefs. Another important psychological concept that has been associated with entrepreneurs is "locus-of-control" beliefs. Rotter's (1966) locus-of-control theory is as follows: An individual perceives the outcome of an event as being either within or beyond his personal understanding and control. Rotter labeled these perceptions as beliefs in internal and external control. Rotter hypothesized that individuals with

internal beliefs are more likely to strive for achievement than individuals with external beliefs. This hypothesis has since been verified in studies by McGhee and Crandall (1968), Gurin, Gurin, Las, and Beattie (1969), and Lao (1970). Since McClelland has asserted that entrepreneurs demonstrate a higher need for achievement than the general population, one might draw the inference that entrepreneurs also tend to hold more internal beliefs, and recent research supports this proposition. Furthermore, Brockhaus (1980a) found successful entrepreneurs to hold more internal beliefs than unsuccessful entrepreneurs. However, a study by Brockhaus and Nord (1979) found no significant difference between owners and managers in terms of locus-of-control beliefs.

It is really not surprising that entrepreneurs have been shown to hold internal beliefs. Because an entrepreneur's decisions have a direct influence on his business performance, he probably believes in the efficacy of his actions (i.e., he probably holds internal beliefs). Conversely, any responsible individual who does not believe that the outcome of a business venture will be influenced by his efforts (i.e., who holds external beliefs) is unlikely to expose himself to the risks of failure.

3. Risk-Taking Propensity. The risk-taking propensity of the entrepreneur is perhaps the one area of research that

has generated the most controversy among academicians. As was mentioned earlier, risk-taking is either implicitly or explicitly included in just about every definition of the entrepreneur. Decision-making under uncertainty is a consistent part of the entrepreneurial function. However, the results of studies conducted on the degree of risk an entrepreneur is willing to take are highly varied, if not downright contradictory. These conflicting results have led to the disagreements in this area.

McClelland has done considerable research attempting to relate achievement motivation to risk-taking propensity. His (1961) conclusion was that persons with high nAch have moderate risk-taking propensities. His reasoning was as follows: An individual expects a certain level of satisfaction of his need for achievement from each risk-associated decision, and the high nAch individual will choose that course of action that maximizes the expected satisfaction. In a situation in which there is complete certainty as to outcomes (i.e., no risk), the individual derives little satisfaction of his need for achievement because no skill is needed to successfully perform the function. In a pure chance situation (i.e., high risk), the individual again derives little satisfaction of his need for achievement because of the lack of effect of skill on the outcome. Since the outcomes of decisions with moderate risk are

dependent on a mixture of skill and chance, they are most apt to satisfy the high nAch person.

Although the above argument makes sense from a logical standpoint, it seems to contradict our observations of the entrepreneur. Certainly an individual can be risking all kinds of important things when he decides to start his own company: financial well-being, career opportunities, family relations, as well as psychological well-being. The key is in distinguishing between objective risk and perceived risk: although the decision to become an entrepreneur often involves a high degree of risk, the entrepreneur is often overly optimistic concerning the probability of success and consequences of failure of his business. This overabundance of optimism may be due to overly-high internal locus-of-control beliefs.

Robert H. Brockhaus, Sr. (1980b) expanded McClelland's research on risk-taking propensity and found both entrepreneurs and managers to be moderate risk-takers. Further, Brockhaus found no significant differences between entrepreneurs and the general population.

Some researchers disagree with McClelland's conclusion, feeling instead that the risk-taking propensity of the entrepreneur is high. Doctors and Juris (1971) for example, asserted that the individual with entrepreneurial drive is willing to take high risks to achieve his goals, while sta-

bility, security, and a predictable environment are more commonly desired by the manager. It is this author's opinion, however, that researchers who attribute a high risk-taking propensity to entrepreneurs ignore the "big picture" by failing to distinguish between objective and subjective risk.

4. Business Ideology. Yvon Gasse (1977, 1978) conducted research on the business ideologies of entrepreneurs and managers, and he found that entrepreneurs and managers have differing sets of attitudes or beliefs about the nature of the management process and business in general. As a result, he has come up with a "business ideology continuum", the extremes of which are the "rational-managerial pole" and the "intuitive-entrepreneurial pole." Unlike entrepreneurs, managerial thinking tends to be a consistent process based on formal principles and vigorous conceptualizations. Therefore, managers, said Gasse, tend to think in more complex, integrated ways than entrepreneurs, whose business ideology is characterized more by simple cognitive structures. An entrepreneur's thinking is largely concerned with day-to-day details, with specific needs in particular circumstances. Further, an entrepreneur is characterized by opportunism, individuality, and intuition in contrast to the manager's organization, planning, professionalism, rationality, and predication.

D. Sociological Factors

A very potent model of the effect of sociological influences on entrepreneurial behavior has been developed by Albert Shapero (1982). Shapero's model is based upon the concept of the entrepreneurial event mentioned earlier. Quite simply, an entrepreneurial event is an entrepreneurial activity undertaken by an individual that represents a change in that individual's life path. It is the endpoint of one process and the beginning of another. (The most obvious entrepreneurial event is of course the formation of a new company.) The question to ask concerning each entrepreneurial event, then, is: What factors helped to bring it about? The most important such factors, as Shapero sees them, are shown in Table 2.

The most direct influences come in the form of "displacements" and "positive pulls." A displaced person is one who is either unemployed or dissatisfied with his current job or lot in life. A negatively-displaced person is one who has been placed in one of the above categories because of an unhappy event or situation. Among the types of negative displacement or "pushes" are the following:

- . Becoming an immigrant.
- . Being fired.

Table 2

Life Path Change

	Perceptions of Desirability	Perceptions of Feasibility
Negative Displacements:		
Forcefully emigrated		
Fired		
Insulted		
Angered		
Bored		
Reaching middle age		
Divorce or widowed		
Between Things:		
Out of army		
Out of school		
Out of jail		
Positive Pull:		
From partner		
From mentor		
From investor		
From customer		
	Culture	Financial support
	Family	Other support
	Peers	Demonstration effect
	Colleagues	Models
	Mentor	Mentors
		Partners
		Company Formation

Source: Kent et al., 1982.

- . Being demoted.
- . Job dissatisfaction, which includes dissatisfaction with the work itself, the boss, co-workers, and opportunity for promotion and what might be called technical or creative frustration. Sometimes a technical professional will become frustrated after he has proposed a particular product, service, or project to an employer and had it turned down.
- . Midlife crisis.

In addition to the above negative displacements, a person can be displaced by being "between things." People who fall into this category include discharged military servicemen and recent graduates.

People who have been displaced are forced, or at least heavily encouraged, to make career decisions. They really cannot afford the luxury of not making a change. The restraints of being employed and having job satisfaction which prevent many persons from making the entrepreneurial decision do not apply. Thus, we find that people who fall into the above categories have a much higher propensity to start businesses than the general population. (Brockhaus (1980) found entrepreneurs to be significantly less satisfied with almost every aspect of their previous job than the general population. The only exception was pay level, with which the entrepreneurs were found to be signi-

ificantly more satisfied.)

Although displacements predominate, many pulls of appealing business opportunities also lead to business startups. Among the major pulls are an offer of financial support, an offer of a contract by a would-be customer, and an offer of partnership by a friend, colleague, or customer.

Once an individual has been displaced or has received an offer to start a business, there are still environmental factors at work which influence his decision of whether or not to become an entrepreneur. Shapero asserted that the actions which an individual will seriously consider and subsequently take are determined by his perceptions of desirability and feasibility concerning those actions. These perceptions of desirability and feasibility are, in turn, influenced by the individual's social and cultural environment.

Perhaps the major social and cultural influence on an individual's perceptions of desirability (which relates strongly to the individual's value system) is the values of the social system(s) in which the individual has existed and exists. These values will be manifested in many different ways: in the economic system of the society, its social ideology, its norms and rewards for behavior, its religious doctrine, its education system, etc. More specifically, an individual is more likely to form a new venture in a social

system that places a high value on that. More generally, a social system that places a high value on innovation, risk-taking, and independence is more likely to produce entrepreneurial events than a system with contrasting values.

In addition to the social system or culture, personal relationships are also a major social influence in establishing desirability and credibility of entrepreneurial action for an individual. In particular, the family, and especially the father or mother, play a very powerful role. Shapero stated that fifty to fifty-eight percent of company founders in the United States had parents who were company owners, independent professionals, independent artisans, or farmers, yet census data from the same period revealed that less than twelve percent of the US population was self-employed. Similar results have been obtained in many studies of many other cultures.

Family members do not provide the only role models: other individuals, such as non-immediate relatives, bosses, colleagues, classmates, and observed strangers in entrepreneurial situations help establish the desirability and credibility of the entrepreneurial act for the individual. On a macro level, the larger the number and variety of entrepreneurs in a particular culture, the greater the probability that other individuals in that culture will form companies. In other words, entrepreneurship is a self-

perpetuating trend. This trend has been shown to exist among several ethnic groups, for example, among the Jews and Lebanese.

Two final factors which impact particularly on the perceptions of feasibility of starting a company are the availability of financial support and the opportunity to form a partnership. The importance of the first of these factors is obvious, while a partner may increase feasibility by providing funding, moral support, labor, a necessary skill, and shared risk.

Despite the fact that Shapero created the above sociological model, he also recognizes the importance of psychological differences in affecting an individual's choice of whether or not to start his own company. However, one would expect entrepreneurs for whom social events played a powerful role in the entrepreneurial decision to represent a broader range of individual factors than entrepreneurs for whom social events were not important. Drawing from Shapero's model, Edwin Harwood (1982) drew a distinction between the "accidental" entrepreneur, who "falls into" a venture mainly due to sociological events, and the "artifactual" or "inevitable" entrepreneur, who makes a conscious decision to start a company even before knowing what his business will be.

E. Personal Characteristics

Some research has been conducted on the age and education level of the typical entrepreneur.

The years between twenty-five and forty have frequently been mentioned as the period during which the entrepreneurial decision is most likely to be made. Liles (1974) concluded that this is a "free choice period," a time during which a potential entrepreneur has obtained sufficient experience, competence, and self-confidence but has not yet incurred financial or family obligations nor a position of prestige and responsibility in a large company.

In a study, Brockhaus and Nord (1979) found the level of education for owners of new businesses to be significantly less than for managers. The researchers hypothesized that a lower level of education may limit the entrepreneur's ability to obtain challenging and interesting jobs (unlike managers) and so force him to start his own business. Brockhaus and Nord also found that the entrepreneur's education level exceeded the average for the general population. This finding is consistent with previous research by Howell (1972).

F. Other Research Areas

Now that we have examined research into the characteristics of the entrepreneur population as a whole, let us examine research aimed at comparing segments of that

population: successful vs. unsuccessful entrepreneurs, technical vs. non-technical entrepreneurs, and internal vs. spinoff entrepreneurs.

1. Critical Success Factors. One area of entrepreneurial research that has been largely ignored is the question of which variables contribute most to entrepreneurial performance. One problem has been the fact that many researchers have chosen to ignore the entrepreneur who is fighting for survival, thereby making the term "entrepreneur" interchangeable with "highly successful entrepreneur." Obviously, it is impossible to determine what makes an entrepreneur successful if one does not recognize the fact that unsuccessful entrepreneurs exist. Also, a problem concerning the information that is available is that it is difficult to generalize: the skills and abilities which may be necessary for entrepreneurial success in one situation may be markedly different from those needed under changed conditions. Nevertheless, several studies have been conducted which are worth mentioning here.

One of the most interesting of these is the Wainer and Rubin (1967) study, which was done under the direction of Edward Roberts. Wainer and Rubin attempted to test McClelland's macro theory of economic growth at the micro level of organizational performance. More specifically, Wainer and Rubin proposed that the degree to which an

entrepreneur is motivated by nAch directly influences his skill as an entrepreneur and thus his enterprise's performance. Additionally, they attempted to test the effects of need for power (nPow) and need for affiliation (nAff) on entrepreneurial success. Whereas nAch affects individualistic behavior, both nPow and nAff affect interpersonal behavior and are therefore determinants of management style. nPow is defined by John Atkinson (1958) as "that disposition, directing behavior toward satisfactions contingent upon the control of the means of influencing another person. In the phenomenal sphere of the power-motivated individual he considers himself the 'gate-keeper' to certain decision-making of others. The means of control can be anything at all that can be used to manipulate another person."⁷ On the other hand, nAff is concerned with the establishment, maintenance, or restoration of positive, affective relationships with other people. Statements of liking or wanting to be liked, accepted, or forgiven are manifestations of this motive.

Wainer and Rubin studied the entrepreneur-presidents of fifty-one small, technically-based spinoff⁸ companies in the Boston area. They found a very marked, positive relationship between nAch and company performance (measured as sales growth rate), thereby strongly supporting their hypothesis. They also found that higher performers demonstrated a

moderate need for power, with lower-rated performers manifesting either a high or low need for power. nAff was found to exhibit a mildly negative relationship. Roberts rationalized the nPow results as follows:

Apparently high need for power manifested by the company founder drives out the possibility that others may effectively contribute to the organization's growth and success. The low need for power, on the other hand, symbolizes a company in which no leadership direction is being exercised - the laissez-faire situation in which every man is boss.⁹

McClelland himself feels that need for achievement is the single characteristic that makes for a better entrepreneur. Although achievement motivation is an important, perhaps the most important factor, McClelland's point of view is rather naive. Little hard evidence exists, but several other characteristics likely bear a relationship to success.

One area in which opinions are split is risk-taking propensity. Several studies have concluded that the successful entrepreneur takes only calculated or moderate risks, but Brockhaus (1982) has questioned whether any relationship at all exists between risk-taking propensity and the success of the enterprise. Michael Palmer has put forth the interesting proposition that the way in which an entrepreneur handles risk is the most appropriate measure of his potential:

I would argue that the entrepreneurial function involves primarily risk measurement and risk taking within a business organization. Furthermore, the successful entrepreneur is that individual who can correctly interpret the risk situation and then determine policies which will minimize the risks involved (for example, converting uncertainty into fixed costs), given a particular goal aspiration.¹⁰

It is likely that sociological factors as well as psychological ones affect entrepreneurial performance. A study by Brockhaus (1970) indicated that prior job dissatisfaction may contribute to new venture success. Highly dissatisfied entrepreneurs may be more highly motivated to avoid returning to previous or similar jobs.

More generally, Gasse (1982) conjectured that previous business experience may have different and even opposite effects on entrepreneurial performance. On the one hand, it may provide the entrepreneur with knowledge and a set of guidelines conducive to better performance; on the other hand, it may create habits that are difficult to change and that may act as obstacles to adaptation and thus better performance. The net effect of experience on an entrepreneur's performance will depend on many factors, including the personality characteristics of the entrepreneur and the transferability of the experience to the entrepreneurial situation. (Previous experience with a small company will be more transferable than experience with a large company, *cet. par.*)

Mayer and Goldstein (1961), in an American study, found that previous business experience rather than formal schooling provided the most significant training for business ownership. Whereas prior experience as an employee in a given industry did not guarantee success as a business owner in that industry (the vast majority of company founders have previous experience in the same industry), previous experience as an owner was important, particularly if the experience was in the same industry. In other words, an experience curve was found to exist for business ownership.

The evidence on the influence of education on entrepreneurial performance is not clear. Gasse (1982) hypothesized that the reason for this is that management skills, which are generally learned in an educational setting, are usually not an important requirement in running a company until that company reaches a certain size and complexity.

One rather comprehensive study of nonpersonality success factors was performed by Roberts (1968), who based his results on data obtained from eighty-four technical spinoff companies. His results are summarized in Table 3. The higher performers in his sample were characterized as follows:

Table 3

Nonpersonality Factors Affecting the Performance of
New Technical Enterprises

	Number of Companies	% of Sample	Factors
Higher performers	42	50	High degree of technology transfer Moderate educational level Specific business function Entrepreneur concerned about personnel matters Marketing department
Lower performers	42	50	Low degree of technology transfer High educational level No specific business function Entrepreneur not concerned about personnel matters No marketing department

Source: Edward B. Roberts, "A Basic Study of Innovators: How to Keep and Capitalize on their Talents," Research Management, 11, No. 4 (1968).

- . High transfer of technology from source company. Technology transfer helps to bring about company success.
- . Moderate education level (i.e., M.S. degree). Within Roberts' sample, lower-rated entrepreneurs typically had a higher education level, i.e., a Ph.D. In general, Ph.D.s do not perform well as entrepreneurs.

- . Specific business functions. The successful technical entrepreneur brings into his organization people for the specific purpose of handling some of the management considerations and management activities. Roberts is uncertain whether this factor is a cause or effect of success: success may be caused by a recognition of the importance of a management "team," or the reverse may be true.
- . Concern about personnel matters. Entrepreneurs who look upon employees as one of their key areas of concern are usually more successful than ones who do not. Roberts feels that concern about personnel matters is a factor in entrepreneurial success.
- . Marketing department. The fact that the more successful new companies contained a marketing department is related to Roberts' earlier finding pertaining to the importance of recognizing the need for specific business functions. The more successful new companies are the ones which actively exploit (i.e., market) advanced technologies.

2. Technical Entrepreneurship. Roberts has also done considerable research in the area of characteristics of technical entrepreneurs. For the most part, these entrepreneurs have been found to exhibit similar characteristics to

those of non-technical entrepreneurs.

Roberts has found that, as with non-technical entrepreneurs, the home environment breeds the technical entrepreneur. In his studies of over 200 technical spinoff companies, he consistently found that fifty percent of the entrepreneurs investigated came from homes in which the father was self-employed. (Recall that Shapero's study revealed that fifty to fifty-eight percent of US entrepreneurs had self-employed parents.) Similarly, Roberts and Peters (1981) found, in a study of MIT faculty, that sons whose fathers were self-employed non-professionals more frequently claimed a serious interest in being in business for themselves. They feel that any relationship between entrepreneurship and a family background in which the father was self-employed is due to the son's familiarity with the conditions of self-employment and possibly a hereditary need for independence found in other studies. Roberts and Peters believe a lack of familiarity with entrepreneurship of sons with non-entrepreneurial fathers discourages such men from starting business because of a relatively greater concern for the unknown consequences.

Roberts, in his studies of spinoff companies, found that on average, the technical entrepreneur is in his early thirties at the time he founds his company, and that few are older than late thirties. This age range falls within

Lile's "free-choice period" for entrepreneurs in general mentioned earlier in this chapter.

One difference which appears to exist between technical and non-technical entrepreneurs is education level. Roberts found technical entrepreneurs to be well-educated, with the average level of education being a MS degree. In contrast, research has found that the large majority of "generic" entrepreneurs do not have college degrees. The fact that technical entrepreneurs are well-educated is not surprising, because of the high degree of specialized knowledge necessary in order to be effective in a technical environment.

Among the other characteristics of technical entrepreneurs which Roberts has found from his research are the following:

- . In their prior lab work, technical entrepreneurs tended to be development-oriented rather than research-oriented.
- . The older the technical entrepreneur at the time of forming his company, the less the amount of technology transferred from the source company. This fact appears to reflect the technical obsolescence phenomenon: as an engineer or scientist ages, he generally finds more difficulties in keeping abreast of the technical advances in a frontier R&D organization.

- . Development-oriented source organizations and development-oriented entrepreneurs tend to transfer more technology into newly-established companies.
- . The longer the time lag between leaving the source organization and setting up a new company, the less the degree of technology transfer. During the elapsed time, the technological advantage that a scientist or engineer possesses from working at a frontier R&D organization is in part lost.
- . Only half of the founders of new technical companies are exploiting their own ideas, the other half being exploitative of someone else's idea. No differences in company success exists between the two groups.

3. Internal vs. Spinoff Entrepreneurship. Some interesting research has also been done in the area of internal entrepreneurship, which was defined earlier in this chapter. An issue of key importance here is the lack of receptivity, in terms of both policies and attitudes, of large companies in developing and exploiting new ideas. This phenomenon has two effects. The first, as Donald A. Schon notes, is that the internal entrepreneur has to play a crucial role in getting major technological advances adopted:

No ordinary involvement with a new idea provides the energy required to cope with the indifference and resistance that major technical change provokes. It is characteristic of champions of new developments that they identify with the idea as their own, and with its promotion as a cause, to a degree that goes far beyond the requirements of their job. In fact, many display persistence and courage of heroic quality. For a number of them the price of failure is professional suicide, and a few become martyrs to the championed idea.¹¹

The second effect is that many internal entrepreneurs are forced to leave major corporations and create their own ventures in order to exploit their ideas themselves. Roberts and Peters feel that, although the task is a difficult one, the large corporation must take steps to make its environment more conducive to entrepreneurial behavior:

The entrepreneurial-oriented exploiter must be given opportunities to take risks with his own ideas and those of others. This is the most difficult challenge to an innovative organization - it must be prepared to be disrupted and changed - it must encourage and facilitate personal risk-taking, rather than function as an inhibitor of entrepreneurial activity. Efforts must be made to change the management role from sifting through and "shooting down" ideas to one of "roadblock removal" for exploitative individuals.¹²

If the organization makes such effects (through, as Roberts (1968) suggests, changes in organizational incentives and managerial philosophies), then it may motivate its entrepreneurially-oriented young men to remain with the company. Potential gains are available if it does so, for such spinoff companies are generally quite successful.

Roberts (1968), in a study of business ventures within a single division of an integrated electronics manufacturer, found that the men who headed these ventures were quite similar in key characteristics (age, education, major work experience, and religious background) to founders of new technical companies. Thus, internal entrepreneurs and spinoff entrepreneurs are similar: only the organizational setting is different.

G. Summary

Based on the research that has been conducted to date on entrepreneurial characteristics, it seems safe to say that both psychological and sociological characteristics play an important role in determining entrepreneurial motivation and behavior. Certainly, the process of new company formation is overdetermined, i.e., no single variable or factor can account for the outcome of the process. The nature of entrepreneurship is indeed complex.

Before we discussed characteristics, we examined the many attempts that have been made to define the entrepreneur. Although the definitions vary widely, we found that the activities most often associated with entrepreneurs are management, decision-making, risk-taking, coordination of resources, and taking initiative. There appears to be a fairly wide consensus that the psychological characteristics

of the entrepreneur include need for achievement, an internal locus-of-control belief, a moderate risk-taking propensity, and an intuitive business ideology. Shapero's model points out that there are also many sociological factors at work on the entrepreneur, including displacement, positive pulls, and social and cultural influences. The personal characteristics most closely associated with the entrepreneur are youth at the time of founding a company and a slightly-above-average education level.

After examining the characteristics of the entrepreneur, we looked at some other important research areas. We found that although little research has been done in the area of critical success factors, success has been shown to be positively correlated with need for achievement. Other characteristics that probably improve performance are a moderate need for power, a moderate risk-taking propensity, a high level of prior job dissatisfaction, a moderate education level, and the "right" type of previous experience. We also found that the technical entrepreneur has many of the same characteristics as the non-technical entrepreneur and that large companies should be concerned with providing the type of atmosphere in which the internal entrepreneur can successfully exploit ideas.

This chapter has covered a lot of research activities on entrepreneurship. One should keep in mind the purpose of

this research, which was described at the beginning of this chapter: research improves our understanding of the entrepreneur so that educational methods to develop entrepreneurial skills can be improved. And thanks to all the research, entrepreneurship is indeed becoming professionalized. Entrepreneurial centers, institutes, and graduate training programs are springing up all over the world. According to Karl Vesper, 160 schools now offer courses in entrepreneurship, up from sixteen in 1970. All this should make the researchers happy and hopefully eager to delve into the subject even more deeply, for much remains to be learned.

Chapter III: The Myers-Briggs Type Indicator

A. Introduction

The purpose of my research was to expand upon prior studies in the area of psychological characteristics of entrepreneurs. My research centered around two questions:

1) Do individuals with entrepreneurial tendencies (i.e., people who either are entrepreneurs or express a desire to become an entrepreneur at some point in their lives) possess psychological characteristics which are different from those of the general population?

2) Do successful¹³ entrepreneurs possess psychological characteristics which are different from those of unsuccessful entrepreneurs?

As indicated in the previous chapter, both of these questions have been largely ignored by researchers. Most academicians have based their research on a functional definition of the entrepreneur. In other words, most researchers have only examined those individuals who have already started their own companies while ignoring those individuals who may well become entrepreneurs at some point in the future. Also, prior research has largely ignored the issue of critical success factors.

The test which I used to conduct my research is based on the Myers-Briggs Type Indicator (MBTI), which is a stan-

standardized test which determines individual psychological characteristics along the lines of four dimensions.

However, before describing my research in more detail, let us first discuss the research which led to the creation of the MBTI as well as each of the four dimensions in some detail.

B. Background

Many twentieth-century psychologists have advanced the notion that people are fundamentally alike. The psychologists who have expressed this belief have all asserted that one is driven by one's instinct, and that the same instinct dominates everyone. Freud, the most famous psychologist of this school of thought, believed that we are all motivated from within by Eros, and that what appears to be more noble motives are merely disguised versions of Eros. Adler (1956) saw us all as power-seekers, and later as seekers of social solidarity. Sullivan (1940), like Adler, targeted social solidarity as the basic instinctual craving, but he felt that people desire social solidarity now, not that they will desire it at some point in the future. The Existentialists (e.g., Fromm (1941)) felt that we all seek after the Self.

Jung (1923), although he agreed that purpose is determined by instinct, disagreed with the idea that all people are essentially alike. He felt that people are different in

fundamental ways, and that these differences are determined by the different ways in which people prefer to function. An individual's preference for a given "function" is characteristic, and so that individual may be "typed" by that preference. Thus, Jung invented the "function types" or "psychological types".

Jung identified four dimensions which determine the ways in which people differ: Extraversion/Introversion, Sensation/Intuition, Thinking/Feeling, and Judging/Perceiving. Each dimension consists of two possible preferences, and so there are sixteen types in all. Each of the dimensions will be described in detail later on in this chapter.

Unfortunately, Jung's typology was ignored during his time: those who spoke of sameness dominated both clinical and lay thought. In fact, it was not until Isabel Myers (1962) created and refined the Myers-Briggs Type Indicator that Jung's theory was brought to life. The MBTI is a test which determines types in individuals; therefore, it opened the theory of types to research. As a result, Education Testing Services, a research institute, has conducted decades of research and amassed vast amounts of information by applying the test to people in a wide variety of enterprises and walks of life. Such research is symbiotic: it provides information both on the behavior and attitudes of the

various types and on the psychological characteristics of people involved in various activities. However, this author could identify no instance in which the MBTI was given to a group of people with entrepreneurial tendencies, another reason which made my research personally exciting.

C. The Four Dimensions

The following discussion describes each of Jung's four pairs of preferences. Before proceeding to these descriptions, however, some general points concerning the typology should be made.

First, it should be noted that, for instance, extraversion and introversion do not represent a dichotomy but rather a continuum. There are most definitely degrees of extraversion, introversion, and so on. This fact is significant in terms of analyzing the data which I collected for my research. (Data analysis is described in the following chapter.)

Second, the question of whether an individual's preferences are inborn or develop fortuitously in infancy and youth remains unsettled. Jung apparently believed the former.

Third, although it is clear that one's preferences have been chosen by the time one reaches adulthood, one can still change in terms of the extent of one's preference for one or

the other of a given pair of functions. Jung hypothesized that one way in which a given preference develops and becomes stronger is through use. Conversely, a preference will become weaker through disuse. These hypotheses, if they are true, are meaningful for our research: if we are able to identify preferences that are associated with entrepreneurial behavior, then one way to increase entrepreneurial activity might be to encourage the use of these preferences.

Following each of the following dimension descriptions are two hypotheses. The first is a conjecture as to how individuals with entrepreneurial tendencies might compare to the general population in terms of the dimension in question. The second hypothesizes as to how successful entrepreneurs might compare to unsuccessful entrepreneurs.

Extraversion vs. Introversion

The main words which differentiate an extravert from an introvert are sociability as opposed to territoriality. The key consideration is determining what "energizes" an individual. The person who chooses other people as a source of energy probably prefers extraversion (E), while the individual who prefers solitude in order to recover energy probably prefers introversion (I).

Extraverts are "tuned up" by interacting with other people: talking to people, playing with people, and working

with people. Extraverts experience loneliness when they are not in contact with others. Introverts, on the other hand, desire space. They seem to draw their energies from pursuing solitary activities, such as working quietly alone, reading, or meditating. Like extraverts, introverts are likely to experience loneliness, but this occurs when they are around others, and especially when they are surrounded by strangers.

Extraverts and introverts, when outside of their preferred environments, will quickly deplete their reserves of energy. An extravert, for example, will find it difficult to, say, study alone for more than a short period of time: he will soon find it necessary to take a short break and find someone to talk to. An introvert, on the other hand, will find it difficult to remain at a party forⁿ very long, because the experience will drain his sources of energy.

According to Myers, a solid majority of the population is made up to extraverts: seventy-five percent are extraverts, while only twenty-five percent are introverts (Bradway, 1964). This fact can be at least partially explained by our capitalist culture, which seems to sanction the outgoing, sociable, and gregarious temperament.

Hypotheses: In most cases, entrepreneurship involves frequent interaction with other people, with colleagues, subordinates, customers, etc. Therefore, we might expect to

find a higher percentage of extraverts among entrepreneurs than among the general population. Furthermore, we might expect successful entrepreneurs to be better at interacting with others (i.e., initiating, developing, and maintaining interpersonal relationships) than unsuccessful entrepreneurs. Certainly, one who enjoys interacting with others (i.e., an extravert) would be more effective in terms of developing interpersonal relationships, etc. Therefore, we might also expect successful entrepreneurs to be more extraverted than unsuccessful entrepreneurs.

Sensation vs. Intuition

The Sensation/Intuition dimension is the one which differentiates people the most. The person who has a natural preference for sensation (S) is practical, while the person who prefers intuition (N) is innovative. The individual who is oriented towards sensation is firmly grounded in reality: he wants facts, trusts facts, and remembers facts. On the other hand, the intuitive person is more of a dreamer, an individual who likes to transport himself beyond the realities of the world around him. However, this means that he does not pay as much attention to facts as the sensation-preferring person, and so he can be subject to greater error about facts.

One of the most important distinctions between sensible

and intuitive people is that the former are concerned with the past and the present while the latter are preoccupied with the future. The sensation-preferring person believes strongly in experience, both personal and global. He focuses on what actually happened rather than worrying too much about what might have been or what will be in the future. On the other hand, the intuitive person is attracted to the realm of the possible, and so the future holds an appeal to him which the past and the actual do not. David Keirse and Marilyn Bates, in their book Please Understand Me, describe how the behavior of an employer conducting job interviews differs based on whether he is sensible or intuitive:

...if a sensation-preferring employer interviews someone for placement, he wants to know what experience the applicant has had. This is important to this employer, because, if an applicant has had experience, the employer feels he has a sound basis for decision. The intuitive-preferring employer, on the other hand, is likely to have confidence not in what the applicant has done in the past but in what an applicant verbalizes about the future of the organization -- what he would do in a hypothesized situation, what he might see as possibilities for growth for the organization, or how he would propose to handle a given problem.¹⁴

The intuitive person often has a vivid imagination, and so he occasionally experiences flashes of brilliance as a result of his speculation on the future. He sometimes finds a complex idea coming to him all at once, and he is unable to explain how he arrived at it. Of course, the intuitive

person can have simple hunches as well as visions, and they can show up in any realm: technology, the sciences, mathematics, philosophy, the arts, or one's social life. Of course, the person who prefers sensation has hunches also, but he does not pay much attention to them.

Intuitive people look to the future because they are bothered by reality. They are often dissatisfied and restless within the real world, and so they are constantly looking toward ways of changing or improving it. And, because they are so restless, they often tend to skip from one activity to the next, perhaps completing none. They often leave others to reap the benefits of their past inspirations.

As with extraversion, the majority of the general population prefers sensation. Seventy-five percent are oriented towards sensation, while only twenty-five percent prefers intuition, according to Bradway (1964).

Hypotheses: Many of the words which describe intuitive individuals also describe many entrepreneurs: innovative, future-oriented, inspired, etc. In addition, the fact that intuitive people often tend to move on to new projects without completing any one of them is typical of many entrepreneurs: both Mayer and Goldstein (1961) and Cooper (1971) found that very often, an entrepreneur will form several companies during the course of his lifetime. Of

course, several qualities of sensible individuals are also often associated with entrepreneurs; for instance, both groups display a willingness to work long hours in order to achieve their goals. However, on balance, one would expect entrepreneurs to be more intuitive than the general population.

As a company becomes larger and more successful, the person running it must spend more and more of his time managing and less and less time innovating. (Innovating may actually become relegated to an R&D department.) Much of management revolves around organizing and evaluating facts, which is what a sensation-preferring individual does. Therefore, one might expect a successful entrepreneur's preference for sensation to strengthen through use (or a preference for intuition to weaken through disuse). In other words, our hypothesis is that successful entrepreneurs demonstrate more of a preference for sensation than unsuccessful entrepreneurs.

Thinking vs. Feeling

Jung refers to persons who prefer the impersonal basis of choice as thinking (T) individuals. Persons who choose the personal basis are feeling (F) individuals. By the impersonal basis of choice, we mean decision-making through the use of such objective tools as logic, principles, the

law, etc. By the personal basis of choice, we mean that decisions are made subjectively, by considering the effects of each choice on the decision-maker and others. Thinkers tend to use argumentation, or logical arguments in order to attempt to win others over to their points of view, while feelers tend to use persuasion, to attempt to appeal to the emotions of others, in order to win them over.

Although the feelers are sometimes seen as more emotional than the thinkers, this is not actually the case. This misunderstanding arises from the fact that the feeling person tends to make his emotional reaction more visible than the thinking person. In fact, the feeling person sometimes seems to enjoy an excessive show of emotion, whereas the thinker sometimes seems embarrassed by such a display.

The T/F preference pair is different from the other three dimensions in that the two different types of people can complement each other. Extravertive and introvertive behaviors tend to conflict, as do intuitive and sensible behaviors and, as we shall see, judging and perceiving behaviors. However, thinkers and feelers provide two different perspectives on a given question, and so they may well aid each other in reaching a decision. (Of course, this can only happen if the two different ways of making a decision are understood and appreciated.)

Myers (1963) found that the T/F dimension is the only

pair of preferences which shows a sex trend: Sixty percent of the thinkers are men, and sixty percent of the feelers are women. In terms of the general population, thinkers and feelers are distributed equally (Bradway, 1964).

Hypotheses: Neither thinkers nor feelers possess any qualities which are particularly characteristic of entrepreneurs. Therefore, one would expect that both the thinking and feeling methods of decision-making would be fairly popular among entrepreneurs. However, two lines of reasoning might argue in favor of a slight thinking orientation among entrepreneurs. First, formal schooling addresses the thinking method far more than the feeling method.

Therefore, the thinking preference should be positively related to education level. (People become more thinking-oriented because they are forced to use that method in school.) And, Brockhaus and Nord (1979) and Howell (1972) have found that the educational level of the entrepreneur exceeds that of the "average person" (See Chapter II).

Second, since slightly over half of the thinkers are male, and since the vast majority of entrepreneurs are male, we might expect entrepreneurs to be slightly more thinking-oriented than the general population.

However, we would expect no distinctions between successful and unsuccessful entrepreneurs along the lines of the T/F dimension. Again, we have two reasons for this.

First, Keirsey and Bates state that both decision-making methods are equally effective. Of course, that is only their opinion. The second reason is that no studies have found a broad correlation between educational level and entrepreneurial success. Using the same argument outlined in the previous paragraph, we would therefore expect the T/F dimension to have no effect on entrepreneurial success.

Judging vs. Perceiving

The difference between judgers and perceivers is easily observed: quite simply, the judging (J) person prefers closure and the settling of things, whereas the perceiving (P) person prefers to keep options open and fluid. The judger is apt to convey a sense of urgency until he has made a pending decision, and then be at ease and satisfied once the decision has been made. In contrast, the perceiver is more apt to resist making a decision until more data and perhaps more options can be found in order to make that decision. As a result, when a perceiving individual makes a decision, he may have a feeling of uneasiness and restlessness. One might say that judgers are outcome-oriented while perceivers are process-oriented.

Judgers tend to establish deadlines and to take them seriously, whereas perceivers do not. In fact, a perceiver may look upon a deadline more as a signal to start than to

complete a project.

Apparently, all judgers share an attitude towards work and play that is quite different from that of the perceivers. Those who prefer judging seem to have a work ethic. Before one may rest or play, one must complete one's work. In addition, judgers are highly concerned with doing a complete job. They will undertake all sorts of preparatory, maintenance, and cleanup activities associated with the job at hand.

In contrast to the judger's work ethic, perceivers appear to have a play ethic. Perceivers seem to be less serious about work than judgers: they do not feel that the work has to be done before play or rest begins. Also, perceivers are not as concerned with performing the less directly important elements of a job, such as preparation, maintenance, and cleanup. According to Bradway (1964), there appears to be about as many judgers as perceivers in the general population.

Hypotheses: Entrepreneurship is an activity which appears to be more attractive to those with a preference for judging. Entrepreneurs are "doers": they usually make constant decisions and work long hours. These activities are definitely not appealing to the perceiver. Furthermore, if one believes in the Protestant work ethic, one would expect successful entrepreneurs to be more judging-oriented

than unsuccessful entrepreneurs. Extreme judgers have extremely strong work ethics, and we might expect this to translate to success.

D. Summary

Jung (1923) developed a typology which we will use in our investigation of the psychological characteristics of a) entrepreneurs (as well as potential entrepreneurs) in general; and b) successful entrepreneurs. He described an individual's personality along the lines of four bases of difference: Extraversion/Introversion, Sensation/Intuition, Thinking/Feeling, and Judging/Perceiving. These four dimensions are summarized in Table 4 in terms of pairs of words and phrases.

Table 4: Summary of Four Dimensions

E (75% of population) versus I (25% of population)

Sociability.....	Territoriality
Interaction.....	Concentration
External.....	Internal
Breadth.....	Depth
Extensive.....	Intensive
Multiplicity of relationships.....	Limited relationships
Expenditure of energies.....	Conservation of energies
Interest in external events.....	Interest in internal reaction

S (75% of population) versus N (25% of population)

Experience.....	Hunches
Past.....	Future
Realistic.....	Speculative
Perspiration.....	Inspiration
Actual.....	Possible

Down-to-earth.....Head-in-clouds
 Utility.....Fantasy
 Fact.....Fiction
 Practicality.....Ingenuity
 Sensible.....Imaginative

T (50% of population) versus F (50% of population)

Objective.....Subjective
 Principles.....Values
 Policy.....Social values
 Laws.....Extenuating circumstances
 Criterion.....Intimacy
 Firmness.....Persuasion
 Impersonal.....Personal
 Justice.....Humane
 Categories.....Harmony
 Standards.....Good or bad
 Critique.....Appreciate
 Analysis.....Sympathy
 Allocation.....Devotion

J (50% of population) versus P (50% of population)

Settled.....Pending
 Decided.....Gather more data
 Fixed.....Flexible
 Plan ahead.....Adapt as you go
 Run one's life.....Let life happen
 Closure.....Open options
 Decision-making.....Treasure hunting
 Planned.....Open ended
 Completed.....Emergent
 Decisive.....Tentative
 Wrap it up.....Something will turn up
 Urgency.....There's plenty of time
 Deadline!.....What deadline?
 Get show on the road.....Let's wait and see...

Source: David Keirsej and Marilyn Bates, Please Understand Me (Del Ray: Prometheus Nemesis Books, 1978).

The Myers-Briggs Type Indicator (MBTI) was developed by Isabel Myers (1962) as a means of measuring an individual's orientation towards one or the other of the eight preferences. A shortened version of the MBTI was used in my research.

In this chapter, hypotheses were developed as to how we might expect a) individuals with entrepreneurial tendencies to compare to the general population, and b) successful entrepreneurs to compare to unsuccessful entrepreneurs, for each one of the four dimensions. These hypotheses are summarized in Table 5.

Table 5
Summary of Hypotheses

	<u>Hypothesized direction for:</u>	
	<u>Entrepreneurs (vs. General Population)</u>	<u>Successful Entrepreneurs (vs. Unsuccessful Entrepreneurs)</u>
Extraversion/Introversion	E	E
Sensation/Intuition	N	S
Thinking/Feeling	T (slightly)	No relationship
Judging/Perceiving	J	J

Chapter IV: Description and Results of Research

A. Introduction

As mentioned in the previous chapter, my research in the area of psychological characteristics of entrepreneurs differed from most of the previous research in several respects:

- . It attempted to determine the characteristics not just of entrepreneurs but of people with entrepreneurial tendencies.
- . It attempted to determine the psychological factors associated with successful entrepreneurship as opposed to unsuccessful entrepreneurship.
- . It was based on the Myers-Briggs Type Indicator, a standardized psychological test which had never before been used to determine entrepreneurial characteristics.

Although I believe the results of my research are meaningful, it should be kept in mind while reading this chapter that I had to deal with certain constraints while developing the methodology. (These are described in the following section.) As a result, the applicability of my results are, to a certain extent, limited. It is important that one take a balanced view while reading this chapter:

the results are neither absolutely conclusive nor entirely useless. In this respect, they are similar to the results of almost all social science research.

B. Methodology

The first step in my research was to define my population of interest; that is, I had to answer the following two questions in the order given: "Who is an entrepreneur?" and "Who is a person with entrepreneurial tendencies?". For the first question, I used a rather broad working definition: I defined an entrepreneur as someone who, at some point in his life, had founded a profit-oriented enterprise. Thus, I included in my definition individuals who had at one point been involved in a company which they had founded but had since, for whatever reason, moved on to other, non-entrepreneurial activities. In other words, my attitude was, "Once an entrepreneur, always an entrepreneur." The single act of founding a company can be indicative of certain psychological characteristics in an individual, whether or not that individual is presently associated with that company.

I also took a rather broad view of the entrepreneur in terms of the level of innovation required to qualify. Therefore, I did not go along with the Schumpeterian view of the entrepreneur as an innovator by necessity: the

entrepreneurial event itself is the innovation, and so there is no necessity to tie the event to new technology.

I defined people with entrepreneurial tendencies as people who describe themselves as having wanted to be entrepreneurs for much of their lives. This definition implies that an entrepreneur can have low entrepreneurial tendencies. This might be the case for any entrepreneur for whom sociological events played a large part in the decision to form a company. Although this is a rather imprecise definition, I will later show how I was able, within my sample, to identify people with strong entrepreneurial tendencies relative to other people in the sample.

After defining my population of interest, my next task was to put together a questionnaire to gather the information needed to answer the two questions posed at the beginning of Chapter III. Of course, the vehicle which I chose to generate the information was the Myers-Briggs Type Indicator; however, the full-length MBTI is 166 questions long and usually takes thirty-five to fifty-five minutes to complete. Therefore, I anticipated a large nonresponse bias if I used this version of the test. Fortunately, Anna-Maria Garden, a doctoral student at the Sloan School of Management at MIT, has developed a short form of the MBTI (thirty-one questions, about twenty minutes to complete). Garden tested her version and found a 90% correlation between the

dimension scores resulting from her short form and those resulting from the MBTI. I therefore decided to use her short form.

In addition, I wrote an addendum to the questionnaire, the purpose of which was to gather the following information:

- . Entrepreneurial tendencies. This was done by asking the respondent to indicate a position on a zero-to-five semantic differential scale, where zero equaled "I have never wanted to run my own company" and five equaled "I have always wanted to run my own company".
- . Involvement with preliminary activities to forming a company. Specifically, the respondent was asked if he had ever developed a business plan or raised money in hopes of starting a company.
- . Entrepreneurial activities. The respondent was asked if he had in fact ever founded a company.
- . General information on most recent company founded (age, industry).
- . Success measures, if company still active. Respondents were asked for the number of employees in their company and their sales level during the last fiscal year. Also, they were asked if their company was profitable

during the last fiscal year and, if so, for net income as an approximate percentage of sales.

- . Demographics (sex, age, marital status, education, household income).

Garden's MBTI short form as well as the addendum are shown in Appendix A.

My third task was to generate a random sample of individuals with entrepreneurial tendencies. However, I soon found out that this would be a highly difficult and time-consuming job. My next best option was to attempt to distribute my questionnaire at meetings, forums, etc. which were attended largely by entrepreneurs and people interested in entrepreneurship. This strategy would generate a sample which, although not random, was the best I could hope to get given time and manpower constraints.

I was able to distribute my questionnaire at two such gatherings: the MIT Enterprise Forum and the 128 Venture Group. The MIT Enterprise Forum is an organization which provides a variety of services to technology-based businesses. Each month, a meeting of the MIT Enterprise Forum is held at MIT in which technical entrepreneurs seeking assistance for their companies present their cases to a panel of experts, who then respond with analysis, commentary, and advice. These meetings are attended by approxima-

tely 300 people, and I distributed my questionnaire at the February meeting.

The 128 Venture Group also meets monthly, but its purpose is much different. The 128 Venture Group is a non-profit organization, the basic purpose of whose meetings is to provide an opportunity for technical entrepreneurs, venture capitalists, and management team candidates to interact. I distributed the questionnaire at the March meeting, which was attended by seventy-nine individuals.

All in all, 267 questionnaires were distributed at these two meetings, 226 at the MIT Enterprise Forum and forty-one at the 128 Venture Group. Seventy-eight questionnaires were returned, giving a response rate of twenty-nine percent. Although this response rate is certainly better than the one I would have had if I had used the full-length MBTI, I obviously did not eliminate nonresponse bias by using the short form. However, this response rate is reasonable for surveys of this kind.

C. Frequencies

In order to analyze my data, I used the Statistical Package for the Social Sciences (SPSS) Batch System on the PRIME computer. SPSS is a very popular statistical package for data analysis associated with marketing research studies and other areas of social science research.

As I had hoped, the sample which I generated is very "entrepreneurial". Fifty-four out of seventy-three respondents, or seventy-four percent, gave a response of either four or five on the question indicating entrepreneurial tendencies. (Five respondents did not answer this question.) Furthermore, fifty-seven respondents, or seventy-three percent of the sample, had at some point developed a business plan, and forty-four respondents, or fifty-six percent, had attempted to raise money in hopes of starting a company. Forty-eight respondents, or sixty-two percent, had in fact founded a company at some point in their lives. The fact that such a large percentage of the sample had taken tangible steps towards founding a company and/or had actually founded a company is an indication of the low respondent measurement error on the question concerning entrepreneurial tendencies. In other words, it appears that most of the respondents who claimed a desire to run their own company have backed up their words with action.

It is interesting to note that of the respondents in our sample who had founded a company, half had founded more than one company. (One respondent had actually founded nine!) This fact is consistent with the findings of Mayer and Goldstein (1961) and Cooper (1971) stated in the previous chapter, which were that many entrepreneurs found more than one company during the course of their lifetimes.

The forty-eight entrepreneurs in our sample had founded a total of ninety firms. Of these, fifty-four are still active, giving a survival rate of sixty percent. Furthermore, forty out of the forty-eight entrepreneurs had founded companies which are still active. Despite the fact that the entrepreneurs in our sample appear to be largely successful in terms of keeping their companies going, the currently-operating firms which they have founded are decidedly small. Twenty-eight out of thirty-nine companies have ten employees or less. (Multiple-firm entrepreneurs were asked to refer only to the most recently-founded currently-operating firm, and one entrepreneur gave invalid company information.) Twenty-two of the firms have annual sales of less than \$100,000. Perhaps related to the small size of the firms is the fact that twenty-one out of thirty-nine companies had not made a profit during the last fiscal year.

In terms of demographic information, most of the respondents (eighty-six percent) are male. The sample is very well-educated: sixty-eight percent had received a master's degree or a doctorate degree. Also, it is very wealthy: sixty-two percent has a household income of \$50,000 or more.

The fact that the sample is largely male is not surprising for a highly entrepreneurial sample, since most entrepreneurs are male. However, one might not expect an

entrepreneurial sample to be as well-educated as this one, since research has indicated that the large majority of entrepreneurs do not have college degrees. (See Chapter II.) This is an indication that systematic error was introduced in the selection of our sample, i.e., that our sample is not entirely representative of our population of interest. This fact will be elaborated on in the following section.

D. Crosstabulations and Chi-Square Tests

A respondent's "score" for each of the four Jungian dimensions was determined from the psychological test as follows: an individual's response for each of the thirty-one questions on the test was an indication as to the respondent's orientation towards one or another of the preferences for a given dimension. Each question consisted of a five-point constant-sum paired comparison, i.e., the respondent was asked to allocate five points for a pair of statements or words. By adding up the number of points given to each preference, a score for that preference was determined. Then, by seeing, for example, if an individual's score for extraversion or introversion was higher, that individual's preference on the Extraversion/Introversion dimension was found. In addition, the respondent's degree of preference for extraversion or intro-

version was found by noting the difference between the two scores.

The first tests that were performed were four chi-square tests to determine if a statistically significant difference in dimension preferences exists between the actual entrepreneurs in the sample and the general population. The hypotheses used for these tests are as follows:

H_0 : No difference in dimension preference exists between entrepreneurs and general population.

H_1 : Difference in dimension preference exists between entrepreneurs and general population.

Each dimension was tested at the .05 and .10 significance levels. The results of the tests are shown in Table 6.

Table 6
Comparison of Dimension Preferences of Entrepreneurs
and General Population

Dimension	$\alpha = .05$	$\alpha = .10$	Direction for Entre- preneurs
Extraversion/Introversion	accept H_0	reject H_0	I
Sensation/Intuition	reject H_0	reject H_0	N
Thinking/Feeling	reject H_0	reject H_0	T
Judging/Perceiving	accept H_0	accept H_0	-

Certainly, the results of these tests are a little puzzling. We were correct on only two of our four hypotheses, for Sensation/Intuition and Thinking/Feeling. (See Table 5.) For these two dimensions, the preferences of entrepreneurs are different in a statistically significant (at the .05 level) way from those of the general population in the hypothesized direction. However, for Extraversion/Introversion the difference is in the opposite direction from what we hypothesized ($\alpha = 10$), and for Judging/Perceiving no statistically significant differences were found, even though we had hypothesized that entrepreneurs would be more judging-oriented than the general population.

These inconsistencies can be explained by the systematic sampling error alluded to earlier in this chapter. The meetings of the MIT Enterprise Forum and the 128 Venture Group are gatherings of technically-oriented individuals, and this fact introduced a bias in my results. (This fact also explains the high education level of my sample.) Keirsey and Bates describe the INTJ personality as a "scientist". One would therefore expect our sample to exhibit an INTJ bias.

Assuming the existence of an INTJ bias in our sample, and assuming that this bias is present among the entrepreneurs as well as the non-entrepreneurs in our sample, it would therefore be more meaningful to compare entrepre-

neurial and non-entrepreneurial groups within our sample than to compare entrepreneurial respondents to the general population. Let us therefore examine crosstabulations of dimension scores by entrepreneurial tendency.¹⁵

Extraversion/Introversion by entrepreneurial tendency is shown in Table 7. Clearly, this table shows a strong, positive relationship between extraversion and entrepreneurial tendency, which is what we had originally hypothesized. The INTJ bias shows up clearly in this table: even though the entrepreneurs in our sample are more introverted than the general population (see Table 6), the non-entrepreneurs are even more introverted.

Table 7
Extraversion/Introversion by Entrepreneurial Tendency

Entrepreneurial Tendency	EI Score			Total
	-30 to -11	-10 to -1	0 to 29	
0-3	3	5	10	18
4	4	11	5	20
5	13	6	15	34
Total	<u>20</u>	<u>22</u>	<u>30</u>	<u>72</u>

$\chi^2 = 10.60, p = 0.03$

Table 8 shows Sensation/Intuition by entrepreneurial tendency. Again, the INTJ bias is clearly evident: the entrepreneurs in our sample are significantly more intuitive

than the general population (see Table 6) but no more intuitive, statistically speaking, than the non-entrepreneurs. It is therefore difficult to make any conclusions concerning the Sensation/Intuition orientation of entrepreneurs in general. However, Table 8 indicates that technically-oriented individuals prefer intuition whether or not they have strong feeling towards entrepreneurship. We may therefore tentatively conclude that technical entrepreneurs are more intuitive (in terms of the Jungian typology) than the general population.

Table 8
Sensation/Intuition by Entrepreneurial Tendency

Entrepreneurial Tendency	SN Score			Total
	-30 to -1	0 to 9	10 to 29	
0-3	2	8	8	18
4	8	6	6	20
5	6	15	13	34
Total	16	29	27	72

$\chi^2 = 5.43, p = 0.25$ †

Just about the same situation exists with the Thinking/ Feeling dimension as with the Sensation/Intuition dimension. (See Table 9.) Our sample's entrepreneurs are significantly more thinking-oriented than the population at large but show no more of a thinking preference than the

non-entrepreneurs. Thus, we can once again see the effects of the technical orientation of and resultant INTJ bias in the sample. Therefore, we can make no conclusions regarding the Thinking/Feeling preference of the "generic" entrepreneur but can make the tentative conclusion that the technical entrepreneur is more thinking-oriented than the general population.

Table 9
Thinking/Feeling by Entrepreneurial Tendency

Entrepreneurial Tendency	TF Score			Total
	-30 to -11	-10 to -1	0 to 29	
0-3	6	6	6	18
4	2	8	10	20
5	5	16	13	34
Total	<u>13</u>	<u>30</u>	<u>29</u>	<u>72</u>

$\chi^2 = 4.53, p = 0.34$

Table 10 is a bit puzzling, for it suggests that entrepreneurs choose the perceiving preference more than the general population. (We hypothesized in the previous chapter that entrepreneurs would be more judging-oriented.) Respondents with high entrepreneurial tendencies are significantly more perceiving-oriented than respondents with low entrepreneurial tendencies. We can still see the INTJ bias in the sample at work: Table 6 shows that the entrepreneurs

are no more judging- or perceiving-oriented than the general population, but they are more perceiving-oriented than the non-entrepreneurs. This implies that the entire sample is more judging-oriented than the general population.

Table 10
Judging/Perceiving by Entrepreneurial Tendency

Entrepreneurial Tendency	JP Score			Total
	-30 to -11	-10 to -1	0 to 29	
0-4	8	20	10	38
5	3	9	22	34
Total	11	29	32	72

$$\chi^2 = 10.76, p = 0.005$$

How can we rationalize the fact that entrepreneurs prefer perceiving more than the general population? Perhaps entrepreneurs choose to "be their own boss" because they dislike the constant deadlines and pressures of the corporate world. (Recall, from the previous chapter, that people who prefer perceiving dislike deadlines.) By working on their own, they can set their own schedules and thereby set their own pace.

After running crosstabulations of dimension scores by entrepreneurial tendency, I then ran crosstabulations of scores for each dimension by success measures for actual

entrepreneurs who had founded currently-operating firms. The success measures examined are number of employees in the firm, sales level during the last fiscal year, and whether or not the company in question made a profit during the last fiscal year. (Net income as a percentage of sales could not be used as a success measure because not enough data were gathered to generate a meaningful crosstabulation.)

Of all these crosstabulations, only one shows a relationship. The crosstabulation of Sensation/Intuition dimension score by company sales level shows a significant relationship at the 10% level and in the hypothesized direction, i.e., in the direction of successful entrepreneurs preferring sensation more than unsuccessful entrepreneurs. (See Table 5.)

The fact that there is no relationship between the Thinking/Feeling scores and the various success measures is consistent with our hypothesis. (See Table 5.) However, we had also expected more relationships to show up for the Extraversion/Introversion, Sensation/Intuition, and Judging/Perceiving dimensions.

One possible explanation is that the success measures used do not accurately gauge entrepreneurial quality. For instance, a company may be small or unprofitable because it is only a recent startup.

E. Summary

The data for my research were generated by distributing a psychological test based on the MBTI, as well as an addendum, to attendees of meetings of the MIT Enterprise Forum and 128 Venture Group. Any conclusions which are made as a result of analysis of this data must be taken with a grain of salt because of sampling error resulting from distributing the test to individuals who were largely technically-oriented. As a result of running various crosstabulations and chi-square tests, the following tentative conclusions based on the Jungian typology were reached:

- . Entrepreneurs are more extraverted than non-entrepreneurs.
- . Technical entrepreneurs are more intuitive than non-entrepreneurs.
- . Technical entrepreneurs are more thinking-oriented than non-entrepreneurs.
- . Entrepreneurs are more perceiving-oriented than non-entrepreneurs.

We would therefore expect the typical technical entrepreneur to have an ENTP personality. Interestingly, Keirse and Bates, in their book, describe the ENTP personality as an "inventor," a title which suits many tech-

nical entrepreneurs.

Crosstabulations involving various company success measures were also run. However, only the Sensation/Intuition dimension showed a mild relationship with entrepreneurial success in the direction of sensation. The rather disappointing results concerning critical success factors may have resulted from the use of inaccurate success measures.

Chapter V: Conclusions

At the beginning the Chapter II, the purpose of entrepreneurial research was described. The aim of such research is to identify entrepreneurial characteristics so that teaching methods designed to improve entrepreneurial skills can be more effectively formulated. However, if we are to believe Jung's theory that people are fundamentally different, then any attempts to inculcate people with entrepreneurial traits would meet with mixed results. Some personalities are simply better suited for the entrepreneurial lifestyle than others, and this paper has given an indication as to what those personalities are.

At the present time, entrepreneurial researchers have yet to develop a measurement instrument which is designed to accurately gauge entrepreneurial potential in individuals. (Such instruments exist for numerous professional occupations, examples being the Strong Vocational Interest Blank (Strong, 1959) and the Kuder Occupational Interest Survey (Kuder, 1970). Therefore, the next step for researchers should be to develop such an instrument. The Myers-Briggs Type Indicator can be useful in this regard. Two qualifiers are in order here. First, the purpose of any test of an individual's potential as an entrepreneur should, of course, not simply be to determine that individual's psychological type. Other psychological variables which have been shown

to be related to entrepreneurship, such as need for achievement, locus-of-control beliefs, etc. should also be included. Second, further research on the MBTI is needed in order to firmly establish the personality types of technical as well as non-technical entrepreneurs.

Fortunately, many academicians recognize the need for such a predictive test, and hopefully one will be developed before too long. Such a test would serve two purposes:

1) it would discourage people with low entrepreneurial potential from pursuing entrepreneurial activities; and, more importantly,

2) it would encourage those with high entrepreneurial potential to consider starting up their own businesses. The ultimate goal should be to increase this country's supply of entrepreneurs. If academic research is able to achieve this goal, and we are therefore able to "ride out" this current wave of entrepreneurship for a little longer, then our economy will be better because of it.

FOOTNOTES

¹Leslie Wayne, "A Pioneer Spirit Sweeps Business," The New York Times, 25 March 1984, Section 3: 1.

²Ibid.

³Ibid.

⁴Ibid., 12.

⁵Ibid.

⁶David McClelland, "Entrepreneurship and Achievement Motivation," Approaches to the Science of Socio-Economic Development, ed. P. Lengyel (Paris: UNESCO, 1971), quoted in Encyclopedia of Entrepreneurship, eds. Calvin A. Kent, Donald L. Sexton, and Karl H. Vesper (Englewood Cliffs: Prentice-Hall., 1982), 75.

⁷John W. Atkinson, Motives in Fantasy, Action, and Society (Princeton: D. Van Nostrand Company, Inc., 1958), 105, quoted in Herbert A. Wainer and Irwin M. Rubin, "Motivation of R&D Entrepreneurs: Determinants of Company Success", MIT Sloan School of Management Working Paper, #303-67, December 1967, 4.

⁸A spinoff company is formed by a company seeking to exploit a technological advance. The technical basis for the company often "spins out" with the entrepreneur from some other existing organization.

⁹Edward B. Roberts, "A Basic Study of Innovators: How to Keep and Capitalize on their Talents", Research Management, 11, No. 4 (1968), 264-65.

¹⁰Michael Palmer, "The Application of Psychological Testing to Entrepreneurial Potential", California Management Review, 13, No. 3, (Spring 1971), 38.

¹¹Roberts, op. cit., 250.

¹²Edward B. Roberts and Donald H. Peters, "Commercial Innovation from University Faculty", Research Policy, 10, No. 2 (2 April 1981), 124.

¹³It should be pointed out that throughout this paper, "successful" and "unsuccessful" are used as relative terms: successful entrepreneurs are those who rate above average on various performance measures, while unsuccessful entrepreneurs are those who rate below average.

¹⁴David Keirse and Marilyn Bates, Please Understand Me (Del Ray: Prometheus Nemeis Books, 1978), 17.

¹⁵Dimension scores were found for each individual by subtracting the extraversion score from the introversion score, the sensation score from the intuition score, the thinking score from the feeling score, and the judging score from the perceiving score. Therefore, extraverts, sensibles, thinkers, and judges are represented by negative

;

scores, while introverts, intuitives, feelers, and perceivers have positive scores. Scores were then collapsed into ten-point ranges for classification purposes, and crosstabulations were run. A generally accepted rule-of-thumb is that crosstabulations are most meaningful when the expected cell frequencies (i.e., the number of observations we would expect for each cell if the variables were unrelated) are all greater than or equal to five. After the initial runs, the crosstabulations were examined and, if necessary, the scales were condensed in order to satisfy this rule-of-thumb. The above procedure was followed for all of the crosstabulations which follow.

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Appendix A: Questionnaire Used in Survey

This is a set of questions designed to indicate your psychological style. The answer you choose to any question is neither "right" nor "wrong." It simply helps to point out where your strengths and weaknesses lie. The test is not designed to measure intelligence, nor to identify symptoms of maladjustment.

Below you will find a number of paired statements and words. Please give every one a score so that each pair will add up to 5. For example:

"In describing my work, I would say it is:"

- | | | |
|----|--------------------------|---------------|
| a) | Challenging and exciting | 4 |
| b) | Routine and dull | $\frac{1}{5}$ |

Clearly, work can sometimes be challenging and sometimes dull. In the above example we have weighted four parts challenging and one part dull. The score could, in your case, be 3 + 2 or 5 + 0 or another combination.

Please choose your scores, one against another, from the following scale:

Minimum ----- Maximum
 Score 0 1 2 3 4 5 Score

- | | | | |
|----|---|--|---------------|
| 1. | Are you more careful about: | | |
| | a) People's feelings | | - |
| | b) Their rights | | $\frac{5}{5}$ |
| 2. | When you have to meet strangers do you find it: | | |
| | a) Something that takes a good deal of effort, | | - |
| | b) Pleasant, or at least easy | | $\frac{5}{5}$ |
| 3. | Does following a schedule: | | |
| | a) Appeal to you | | - |
| | b) Cramp you | | $\frac{5}{5}$ |
| 4. | Do you usually get on better with: | | |
| | a) Imaginative people | | - |
| | b) Realistic people | | $\frac{5}{5}$ |
| 5. | Are you naturally: | | |
| | a) Rather quiet and reserved in company | | - |
| | b) A good "mixer" | | $\frac{5}{5}$ |

6. Is it harder for you to adapt to:
- a) Routine
 - b) Constant change
7. Which of these two is the higher compliment:
- a) He is a person of real feeling
 - b) He is consistently reasonable
8. When you are in an embarrassing spot, do you usually:
- a) Turn it into a joke, or
 - b) Much later, think of what you should have said
9. In doing something with many other people, does it appeal more:
- a) To do it in the accepted way
 - b) To invent a way of your own
10. Are you at your best:
- a) When following a carefully worked out plan
 - b) When dealing with the unexpected
11. Do you get more annoyed at:
- a) Fancy theories
 - b) People who don't like theories
12. Is it higher praise, to be called:
- a) A man of vision
 - b) A man of common sense
13. Do you more often let:
- a) Your heart rule your head
 - b) Your head rule your heart
14. When you think of some little thing you should do or buy, do you:
- a) Often forget it until much later
 - b) Usually get it down on paper before it escapes you
 - c) Always carry through on it without reminders
15. Can you:
- a) Talk easily to almost anyone for as long as you have to
 - b) Find a lot to say only to certain people or under certain conditions

16. Do you think it is a worse fault:
 a) To show too much warmth
 b) To be unsympathetic
 -
 5
17. If you were a teacher would you rather teach:
 a) Courses involving theory
 b) Fact courses
 -
 5
18. When it is settled well in advance that you will do a certain thing at a certain time, do you find it:
 a) Nice to be able to plan
 b) A little unpleasant to be tied down
 -
 5
19. Can the new people you meet tell what you are interested in:
 a) Right away
 b) Only after they really get to know you
 -
 5
20. In your daily work, do you:
 a) Rather enjoy an emergency that makes you work against time
 b) Hate to work under pressure
 c) Usually plan your work so you won't need to
 -
 -
 5
21. In a large group, do you more often:
 a) Introduce others
 b) Get introduced
 -
 5

Please allocate scores on the same basis to the following choice of words and phrases so as to indicate your preferences:

- | | | | |
|----------------------------------|--------|---|--------|
| 22. a) touching
b) convincing | -
5 | 23. a) punctual
b) leisurely | -
5 |
| 24. a) justice
b) mercy | -
5 | 25. a) production
b) design | -
5 |
| 26. a) foundation
b) spire | -
5 | 27. a) gentle
b) firm | -
5 |
| 28. a) uncritical
b) critical | -
5 | 29. a) calm
b) lively | -
5 |
| 30. a) literal
b) figurative | -
5 | 31. a) imaginative
b) matter of fact | -
5 |

ADDENDUM

1. Please indicate, on a scale of zero to five, the extent to which you have wanted to run your own company. (0="I have never wanted to run my own company"; 5="I have always wanted to run my own company.")__

2. Have you, alone or with colleagues, ever developed a business plan in the hopes of starting a company?

- Yes
- No

3. Have you, alone or with colleagues, ever attempted to raise money in the hopes of starting a company?

- Yes
- No

4. Have you, in fact, ever founded a company, either alone or with colleagues?

- Yes
- No

If your answer to this question is "No", please proceed to Question 12.

5. How many companies have you founded?

- One
- Two
- Three
- More than three (Please specify. __)

6. How long has your company been (or was your company) in existence? (If you have founded more than one company, please refer to the last one you founded.)

- 0-6 months
- 6-12 months
- 1-2 years
- 2-5 years
- 5-10 years
- More than 10 years

7. Which of the following headings best describes your company's activities? (If you have founded more than one company, please refer to the last one you founded.)

- Agriculture, Forestry, and Fishing
- Mining
- Construction
- Manufacturing
- Transportation and Communications
- Wholesale Trade
- Retail Trade
- Finance, Insurance, and Real Estate
- Services (including consulting and contract R+D)

8. Of the companies you have founded, how many are still in operation?

- None
- One
- Two
- Three
- More than three (Please specify. __)

If your answer to this question is "None", please proceed to Question 12.

9. How many employees does your company presently employ? (If you have founded more than one currently-operating company, please refer to the youngest of these.)

- 1-10
- 11-25
- 26-50
- 51-100
- 101-1,000
- More than 1,000

10. During the last fiscal year, what was your company's sales level? (If you have founded more than one currently-operating company, please refer to the youngest of these.)

- \$0-\$100,000
- \$100,000-\$500,000
- \$500,000-\$1 million
- \$1 million-\$10 million
- \$10 million-\$50 million
- Over \$50 million

11. During the last fiscal year, did your company make a profit? (If you have founded more than one currently-operating company, please refer to the youngest of these.)

- Yes (Net income as approximate percentage of sales __)
- No

12. What is your sex?

- Male
- Female

13.How old are you?

- Under 18
- 18-24
- 25-29
- 30-35
- 36-49
- Over 49

14.What is your marital status?

- Married
- Single
- Widowed
- Divorced
- Separated

15.How much formal education have you received?

- Did not finish high school
- Received high school diploma
- Received college diploma
- Received master's degree
- Received doctorate degree

16.What is your household income?

- \$0-\$10,000
- \$10,000-\$20,000
- \$20,000-\$30,000
- \$30,000-\$50,000
- Over \$50,000

Thanks again for your cooperation!