

**SEEING WHAT'S NOT THERE:  
THE ENIGMA OF ENTREPRENEURSHIP**

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**ABSTRACT**

*The process is clear: entrepreneurs initiate business ventures. What is not clear is why they do so. The debate continues to rage about entrepreneurial behavior and this singular act of individual volition which is so vital to a nation's economic health and well being. The drives and personalities continue to be debated. Gartner (1988) asks, "Can one know the dancer from the dance?" Is it even important to try? Carland, Hoy and Carland (1988) think it is essential because one cannot understand the dance without understanding the dancer.*

*We think that the dance takes on the personality of the dancer. It is the dancer who interprets the dance and each artist makes the process his or her own. If we seek to understand the entrepreneurial process, we must have some insight into the entrepreneurial psyche. This is especially true if we wish to design educational and training programs for prospective and practicing entrepreneurs.*

*In this work, we empirically examine 502 owner/managers of small businesses. We identify entrepreneurial vision, the ability to see what is not there, as their commonality. We empirically link that vision to the entrepreneurial psyche and use that to build insight into the entrepreneurial enigma, the process of entrepreneurship.*

**INTRODUCTION**

The process is clear: entrepreneurs initiate business ventures. What is not clear is why they do so. The debate continues to rage about entrepreneurial behavior and this singular act of individual volition which is so vital to a nation's economic health and well being. The drives and personalities continue to be debated. Gartner (1988) asks, "Can one know the dancer from the dance?" Is it even important to try? Carland, Hoy and Carland (1988) think it is essential because one cannot understand the dance without understanding the dancer. We think that the dance takes on the personality of the dancer. Each artist makes the process his or her own.

The outcome of the process of entrepreneurship is obvious for all to see: the creation of a new venture. That the venture may be the culmination of the dreams of a life time seems unimportant in the face of the incontrovertible: the tangible outcome of the process. But we cannot lose sight of another fact that is beyond debate: the trigger of the act is an individual. The key is that individual, the initiating force, the one who sees the opportunity,

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the challenge, and the one who takes that challenge. If we would understand the enigma of entrepreneurship, we must begin to circumscribe the behavior of the entrepreneur. Herron and Sapienza (1992) avow that the individual entrepreneur is the most salient unit of analysis in entrepreneurship research and theory.

The value of the phenomenon of entrepreneurship is well established, both in terms of economic vitality and research and development. We may be interested in supporting and facilitating the process in the interests of national well being, economic development, or advancing the standard of living. We may be concerned about designing and administering entrepreneurial education and training programs to inculcate the skills and abilities required for success. In either event, but particularly so in the latter case, we must begin by understanding the initiator: the entrepreneur. How can one design a training program or a curriculum of entrepreneurship education if one does not understand the drives and characteristics which lead to the decision to initiate a venture, to concentrate on its growth, to take it public, to strive to dominate an industry? To teach the dance, one must teach the dancer. Here, then, is our effort at understanding the dancer, at unraveling the enigma of entrepreneurship.

## CHARACTERISTICS OF ENTREPRENEURS

Much of the research in entrepreneurship has been founded upon the premise that entrepreneurs embody distinctive personality characteristics which can be identified (Cooper & Dunkelberg, 1987), and used to indicate a potential for entrepreneurship (Lachman, 1980). These approaches have been criticized because they tend to be difficult to operationalize (Gartner, 1988). Nevertheless, one must approach the explication of a gestalt by describing its contributory factors.

The earliest identified entrepreneurial characteristic was risk taking. Cantillon (circa 1700) portrayed an entrepreneur as the individual who assumed the risk for the firm (Kilby, 1971), a perspective echoed by Mill (1848). Palmer (1971) proffered that risk assessment and risk taking are the primary elements of entrepreneurship. Risk includes not only financial considerations, but also career opportunities and family relations (Liles, 1974). Yet, researchers are undecided about the role of the risk taking propensity of entrepreneurs (Brockhaus, 1987).

Some studies have indicated no significant differences in risk taking propensities for entrepreneurs as compared to the general population (Brockhaus, 1980; Sexton & Bowman, 1983). Others have discovered a higher propensity for risk taking among entrepreneurs (Sexton & Bowman, 1986; Carland, Carland, Carland & Pearce, 1995), particularly when confronted with business risk (Ray, 1986), but moderated by business experience, age, education, and type of business (Schwer & Yucelt, 1984). Research has also shown that entrepreneurs evidence low uncertainty avoidance irrespective of culture (McGrath, MacMillan, & Scheinberg, 1992). Schumpeter (1934) posited that the burden of risk was inherent in ownership, and since entrepreneurs were not necessarily owners, the propensity for assuming risk should not be included as an entrepreneurial trait. Instead, according to Schumpeter, the central characteristic of entrepreneurship should be innovation.

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Schumpeter's view of entrepreneurial innovation was rooted in the classic theories of economists such as Say and Marshall (Hornaday, 1992). In the literature, innovation remains a frequently identified functional characteristic of entrepreneurs (e.g., McClelland, 1961; Hornaday & Aboud, 1971; Timmons, 1978; Brockhaus, 1982; Carland, Hoy, Boulton & Carland, 1984; Gartner, 1990). Timmons (1978) suggested that creativity and innovation were conditions inherent in the role of entrepreneurship. Drucker (1985) actually defined entrepreneurship as innovation in a business setting as the entrepreneur generates new capacity for wealth from limited resources. Olson (1985) included invention, an activity analogous to innovation, as a primary entrepreneurial activity. This contention was intensified by Carland, Hoy, Boulton and Carland (1984) who proposed that innovation was the critical factor in distinguishing entrepreneurs from managers and small business owners. Hornaday (1992) deftly illustrated that while innovation is a necessary element of entrepreneurship, alone it is insufficient to fully circumscribe entrepreneurial behavior because of the broad parameters of the function. Despite the often stated significance of creativity and innovation vis-a-vis entrepreneurs, relatively few studies have empirically investigated the proposed relationship.

Perhaps the most ubiquitous entrepreneurial characteristic is the need for achievement. This insight was initiated by the work of McClelland (1961). In a study of behavior in young men, McClelland (1961, 1965) concluded that a high need for achievement would influence the self selection of an 'entrepreneurial' position, defined as a salesman, company officer, management consultant, fund-raiser, or owner of a business. Thus, these studies did not actually link need for achievement with the founding or ownership of a business.

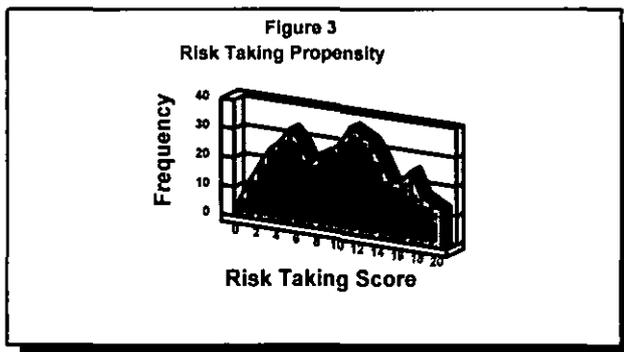
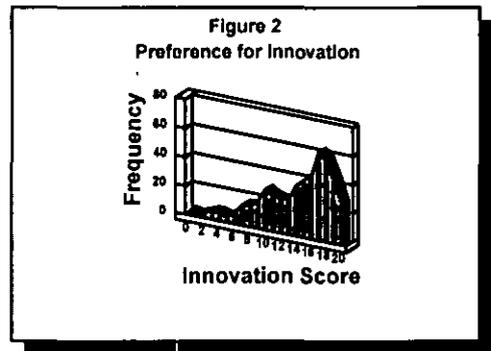
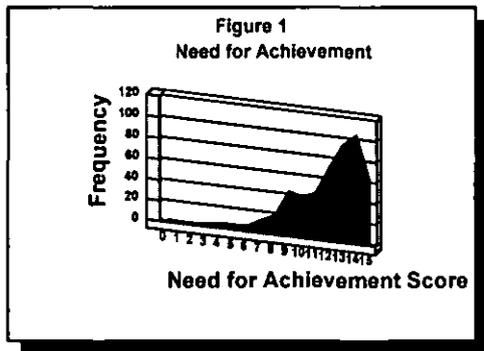
Numerous subsequent studies have shown a positive relationship between achievement motivation and entrepreneurship (Hornaday & Bunker, 1970; Hornaday & Aboud, 1971; DeCarlo & Lyons, 1979; Lachman, 1980; Begley & Boyd, 1986). Other studies have shown that need for achievement is not the most important variable for predicting the likelihood of starting a business (Borland, 1974; Hull, Bosley, & Udell, 1980). Johnson (1990) suggested that because of the variability of the samples, different operationalizations of the achievement motive, and convergent validity problems in instrumentation, more research is necessary to prove a definitive link between achievement motivation and entrepreneurship.

The ability to identify and solve problems seems endemic to the entrepreneurial process. Jung (1971) posited that one's view of a problem is a function of how one perceives the world and assesses information. Jung labeled perception modes as sensation or intuition, and thought processes as either thinking or feeling. According to Jung, decision making that is based upon the thinking mode is methodical, while decision making based upon feeling is characterized by impulsiveness. Myers and Briggs (1962) extended the original work of Jung to develop further the orientation toward perception and judgment. A preference for one mode over another was considered to be an attitude. Four attitudes resulted: extroversion versus introversion and perception versus judgment. These attitudes combined with four functions, sensation versus intuition and thinking versus feeling, produce sixteen permutations of preferences known as personality types or cognitive styles. These typologies are indicated by the Myers-Briggs Type Indicator (MBTI). Keirsey and Bates (1984) used the MBTI types to identify four primary temperaments which represent the major cognitive distinctions among people.

Carland and Carland (1992), drawing largely upon the work of Jung (1971), Myers and Briggs (1962), and Keirsey and Bates (1984), analyzed the problem-solving styles of managers, entrepreneurs, and small business owners. Using the Keirsey and Bates temperaments of SP, SJ, NF, and NT, the authors explored the differences of innovation, risk and achievement by cognitive type and concluded that temperament did indeed go far toward explicating the phenomenon of entrepreneurship.

## THE ENTREPRENEURIAL GESTALT

Hornaday's observation about the inability of innovation to circumscribe entrepreneurship (1992) is a result of the gestalt nature of the phenomenon. Even if need for achievement, preference for innovation and risk taking behavior are endemic to the entrepreneurial psyche, operationalizing the insight is problematic because each trait is normally distributed. To illustrate, Figures 1, 2 and 3 display graphs of the distributions of scores for the group of 502 small business owners which we will be examining in this study. The scores illustrated are those on established instruments which measure the need for achievement, the preference for innovation and the propensity for risk taking.



The graphs may not visually resemble the bell shaped curve, but a statistical examination is required to determine whether the three distributions are normally distributed. For this purpose, we applied the Kolmogorov-Smirnov test under the Lilliefors option (Wilkinson, 1990). This statistic assumes no prior distribution but standardizes the

variables and tests whether the standardized versions are normally distributed. The results, displayed in Exhibit 1, show a high probability that the scores are normally distributed.

**EXHIBIT 1**  
Kolmogorov-Smirnov Test for Standard Normal Distribution

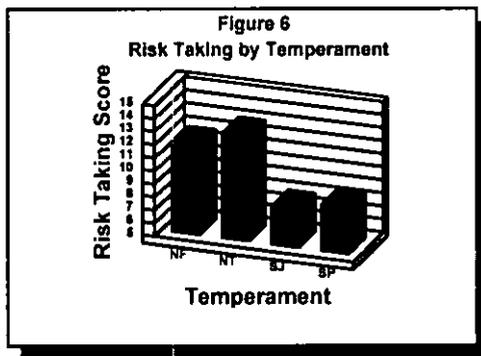
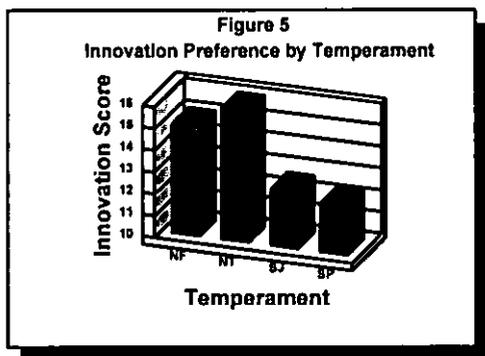
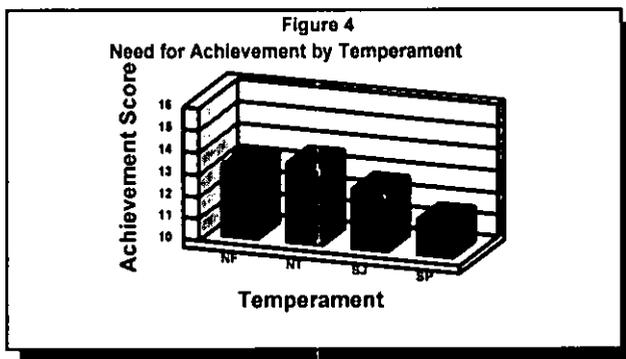
Variable	N	Maximum Difference	Lilliefors Probability
Achievement Score	502	.181	.000
Innovation Score	502	.140	.000
Risk Taking Score	502	.085	.000

The concept that behavior traits of entrepreneurs are normally distributed is far reaching. It implies that prediction of individual behavior will be complicated by the relative strength of that individual's personality orientation. This difficulty may well be the primary source of the confusion of results which seem to confound the advancement of the discipline. It is not surprising that different samples of entrepreneurs can be examined with totally different outcomes if one recognizes that the members of that sample may lie anywhere in a broad distribution of trait strength. This problem led us to focus this research on an empirical analysis of the interactions of the classic portrait of an entrepreneur. If entrepreneurship is a gestalt, we must study it as such in order to grasp the significance and practical applicability of our findings.

We immediately face two basic questions in this quest. Are there any commonalities in entrepreneurial behavior? Is there some unifying perspective that has the potential to provide a structure for researching the phenomenon? The literature is rich in both process and trait work. Although the discipline seems at times disjointed, there is one perspective that seems to us to be common to all of the insights produced over the years: entrepreneurial vision. Whether we call it innovation and creativity, or the process of creating a venture, the commonality is that all of us recognize that the entrepreneur had the ability to see what is not there. The vision is the key. It is the insight to identify an under-served market; the intuition to design new products, services or methods which can capture markets; the sixth sense that leads to an understanding of time, place, product and market. It is entrepreneurial vision that guides the act of volition which culminates in all of the phenomenon which we study: the creation of a venture; the guidance and nurture of a venture; and, the growth and development of a venture.

The most promising approach to examining entrepreneurial vision, we felt, was the use of cognitive typologies. Recognizing that a major aspect of an individual's temperament is intuition, we decided to investigate whether typologies had the potential to form the structure for examining the entrepreneurial gestalt. To that end, we employed the Myers-Briggs Type Indicator (Myers & Briggs, 1962) to the subjects in this study and partitioned them into the four major temperaments which Keirsey and Bates (1984) espouse: NF, intuitive-feeling; NT, intuitive-thinking; SJ, sensing-judging; and, SP, sensing-perceptive. The immediate question is do the four temperaments display differences in the strength of the key traits, need for achievement, preference for innovation, or risk taking propensity, which are so well established in the literature? If they do, then we may have found a basis for understanding the interaction of the established personality traits in supporting entrepreneurial vision.

As a matter of fact, the temperaments do indeed, display different strengths on these traits. Pictured in Figures 4, 5 and 6 are graphs illustrating that the two intuitive temperaments, the NF and NT cognitive groups of small business owners displayed higher scores on the need for achievement, preference for innovation and risk taking propensity than did the sensing based temperaments.



This rather unscientific insight led us to choose cognitive typology as a structure for investigating the entrepreneurship gestalt. That is, we intend to employ cognitive temperament as a foundation for statistical examination of the need for achievement, preference for innovation and risk taking propensity. We are now ready to begin our investigation of the enigma of entrepreneurship. Recognizing that advancing our understanding requires an empirical foundation, we designed a research methodology to pursue the heffalump (Hull, Bosley & Udell, 1980).

## RESEARCH METHODOLOGY

The researchers in this study designed an instrument which contained established measures of the need for achievement, preference for innovation, risk taking propensity, and cognitive typology. Demographic and strategic questions rounded out the survey. Graduate business students selected the participants of the study on a convenience basis. The students solicited responses from employers, employers of their parents, acquaintances, or from individuals with whom they had some other form of contact. Participants in the study came from 30 states, however, most respondents lived in the Southeastern United States.

Although the sample is convenience in nature, there are several benefits from this sampling technique. First, the sample was not anonymous, and the data set was controlled.

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The questionnaires were examined upon submission, and incomplete questionnaires could be returned for completion. The lack of anonymity also ensures that the appropriate individual in the business actually completed the survey. Second, the rate of response was greater than that of the typical mail survey. Less than one in twenty individuals who were approached declined to participate in the study, suggesting that individuals participated in the survey who might not otherwise have responded. Therefore, while still existent, nonresponse bias is not as problematic as with the typical mail survey. Third, the technique supported the ability to generate a large sample size. The sample includes 502 active owner-managers of small businesses. The central limit theorem (Mason, 1982) suggests that, due to the sample size, the level of confidence of this sample approaches that of a random sample.

The businesses selected for study fit the Small Business Administration guidelines, i.e., a small business is independently owned and operated, and not dominant in its field. Moreover, the number of employees and volume of sales of the firms complied with the Small Business Administration's guidelines for assistance. Consequently, every individual in the study was the principal owner and manager of a qualifying small business. Demographic information concerning the individual respondents and size and industry characteristics of their firms is displayed in Exhibit 2.

The Achievement Scale of the Personality Research Form (Jackson, 1974) was used to measure the need for achievement. Jackson (1974) reported that the test-retest reliability (N=135) was .80, and odd-even reliability (N=192) was reported to be .77. Jackson and Guthrie (1968), testing for validity, reported correlations with self ratings and peer ratings of .65 and .46, respectively. The authors concluded that the instrument contained convergent and discriminant validity.

Risk taking propensity and preference for innovation were measured using the Risk Taking Scale and Innovation Scale of the Jackson Personality Inventory (Jackson, 1976). For risk taking propensity, Jackson (1976) tested the internal consistency reliability with two samples (N=82 and N=307), and reported values of .93 and .91 using Bentler's coefficient theta, and .81 and .84 using coefficient alpha. Testing for validity (N=70), Jackson (1976) reported correlations with the completion of an adjective checklist, with self rating and peer rating of .75, .77, and .20 respectively. The internal consistency reliability of the Innovation Scale produced values of .94 and .93 using Bentler's coefficient theta, and .83 and .87 using coefficient alpha. Validity was checked using the completion of an adjective checklist, with self rating, and peer rating of .79, .73, and .37, respectively.

Reliability for the instruments pertaining to risk taking propensity, preference for innovation, and need for achievement were analyzed in the current study using Cronbach's Alpha. The alphas were .76, .77, and .72, respectively. These scores suggest that the instruments accurately measure the characteristics, and that the individual items on the tests produce comparable patterns of responses over all cases.

**EXHIBIT 2**  
Demographic Data (N = 502)

Type of Company	Retail	19%
	Wholesale	3%
	Manufacturing	43%
	Construction	2%
	Service	29%
Organization	Proprietorship	79%
	Partnership	11%
	Corporation	10%
Sales	Less than \$100K	12%
	\$100K to \$500K	10%
	\$500K to \$1M	6%
	Over \$1M	64%
Employees	Less than 10	24%
	10 to 50	11%
	51 to 100	6%
	101 to 250	5%
	Over 250	49%
Age of the Owner	Under 25	4%
	25 to 35	33%
	36 to 45	36%
	46 to 55	20%
	Over 55	6%
Sex of the Owner	Male	76%
	Female	24%
Race of the Owner	Majority	96%
	Minority	4%
Education of the Owner	Less than 12 years	3%
	12 years	19%
	13 to 15 years	17%
	16 years	46%
	Over 16 years	13%

The 32-item forced-choice short form of the Myers-Briggs Type Indicator (MBTI) (Myers & Briggs, 1962) was included to measure the cognitive typology of the respondents. Mendelsohn (1965) reported that the TF (thinking versus feeling), SN (sensation versus intuition), and EI (extroversion versus introversion) scales are independent, while the JP (judging versus perceiving) scale is consistently correlated with the SN scale. Internal

consistency reliabilities were reported in the range from .75 to .85, and a 14-month test-retest correlation of .70 was reported. As advised by Myers and McCaulley (1985), the MBTI scores were converted to continuous distributions for each of the four pairs of characteristics. These scores are the basis for the determination of the four fundamental temperaments. Scores less than 100 imply a preference for the first letter in the scale, while scores greater than 100 indicate a preference for the second letter in the scale. This conversion also supports the use of the scores in parametric statistical operations.

### RESULTS OF THE ANALYSIS

Using the MBTI scores to partition the data set resulted in identifying NFs, NTs, SJs, and SPs in proportions displayed in Exhibit 3. Interestingly, these proportions do not fit the national population distribution of 38% SJs, 38% SPs, 12% NFs and 12% NTs (Keirsey & Bates, 1984). Small business owners may not be a mirror of the national population. NTs are represented in this sample at more than twice the expected level. SJs and NFs are slightly higher here than in the national population, while SPs are dramatically under represented. This may have to do with the relative satisfaction of various temperaments under normal conditions of employment.

EXHIBIT 3			
Distribution of MBTI Scores			
Temperament	Number	Percent	Normal Percent
SJs	222	44%	38%
SPs	56	11%	38%
NFs	77	15%	12%
NTs	147	29%	12%

The first step in the statistical analysis was the examination of the scores which each of the four temperament groups produced on each of the three personality profile instruments. That is, we examined the scores for need for achievement, preference for innovation, and risk taking propensity, for each of the groups, NFs, NTs, SJs, and SPs.

The first step was to examine each of the distributions for normality. As was the case with the overall scores, the individual distributions were normal, with one exception. Exhibit 4 shows the results of the Kolmogorov-Smirnov test under the Lilliefors option (Wilkinson, 1990) for each of the four temperaments. As the table shows, all three instruments produced normally distributed data for each of the four temperament groups except for risk taking among SPs.

EXHIBIT 4 Kolmogorov-Smirnov Test			
Variable	N	Maximum Difference	Lilliefors Probability
NFs			
Achievement Score	77	.186	.000
Innovation Score	77	.175	.000
Risk Taking Score	77	.116	.012
NTs			
Achievement Score	147	.186	.000
Innovation Score	147	.188	.000
Risk Taking Score	147	.079	.024
SJs			
Achievement Score	222	.177	.000
Innovation Score	222	.106	.000
Risk Taking Score	222	.119	.000
SPs			
Achievement Score	56	.163	.001
Innovation Score	56	.118	.049
Risk Taking Score	56	.109	.097

The second step in the statistical analysis was a search for differences in the scores which each of the four temperament groups produced on each of the three personality profile instruments. Descriptive statistics are displayed in Exhibit 5.

The mean scores in the table are more revealing in light of the range of scores which each of the instruments produces. The need for achievement instrument produces a range of scores from 0 to 16. The preference for innovation scale produces a range of scores from 0 to 20. The risk taking propensity instrument also produces a range of scores from 0 to 20. The table shows that the two intuitive groups, NFs and NTs, displayed higher mean scores on all three instruments than did the sensing groups.

The descriptive statistics do not indicate whether differences in scores are statistically significant, consequently, the next phase of the investigation involved Analysis of Variance (ANOVA) on the scores of each of the instruments for each of the temperaments. The results of those statistics are displayed in Exhibit 6. The table shows that the scores on each of the three instruments are significantly different for the various cognitive temperaments. In fact, the level of significance is quite high.

EXHIBIT 5 Descriptive Statistics				
	N	MEAN SCORE	VARIANCE	STD DEVIATION
NFs				
Achievement	77	13.260	6.353	2.520
Innovation	77	15.013	17.671	4.204
Risk Taking	77	11.779	26.806	5.177
NTs				
Achievement	147	16.605	4.542	2.131
Innovation	147	16.517	9.430	3.071
Risk Taking	147	12.980	19.705	4.439
SJs				
Achievement	222	12.707	7.131	2.670
Innovation	222	12.599	21.906	4.680
Risk Taking	222	7.874	22.645	4.759
SPs				
Achievement	56	12.607	8.788	2.965
Innovation	56	12.214	18.171	4.263
Risk Taking	56	8.482	20.181	4.492

EXHIBIT 6 Analysis of Variance					
Achievement		N=502		Squared Multiple R: 0.026	
Source	Sum of Squares	DF	Mean Square	F Ratio	p
Temperament	85.789	3	28.596	4.443	.004
Error	3205.246	498	6.436		
Innovation		N=502		Squared Multiple R: 0.159	
Source	Sum of Squares	DF	Mean Square	F Ratio	p
Temperament	1621.830	3	540.610	31.450	.000
Error	8560.443	498	17.190		
Risk Taking		N=502		Squared Multiple R: 0.196	

Source	Sum of Squares	DF	Mean Square	F Ratio	p
Temperament	2680.718	3	893.573	40.349	.000
Error	11028.636	498	22.146		

The last finding led us to examine whether the actual cognitive scores could shed any more light on the entrepreneurship function. Accordingly, we turned to converted MBTI scores for EI, SN, TF and JP. These scores, as reported above, had been converted into continuous distributions to support statistical examination (Myers & McCaulley, 1985). The first step in the examination was a correlation statistic. Exhibit 7 displays a Pearson correlation matrix and the statistical significance for each cell.

EXHIBIT 7							
Pearson Correlation Matrix							
	Ach	Inn	Risk	EI	SN	TF	JP
Achievement	1.000						
Innovation	0.375	1.000					
Risk Taking	0.241	0.414	1.000				
EI Score	-0.146	-0.249	-0.294	1.000			
SN Score	0.176	0.485	0.510	-0.336	1.000		
TF Score	-0.095	-0.092	-0.084	-0.063	0.156	1.000	
JP Score	0.070	0.164	0.352	-0.113	0.506	0.228	1.000
Bartlett Chi-Square Statistic: 697.281    DF = 21    Probability = .000							
MATRIX OF PROBABILITIES							
	Ach	Inn	Risk	EI	SN	TF	JP
Achievement	0.000						
Innovation	0.000	0.000					
Risk Taking	0.000	0.000	0.000				
EI Score	0.001	0.000	0.000	0.000			
SN Score	0.000	0.000	0.000	0.000	0.000		
TF Score	0.033	0.040	0.060	0.158	0.000	0.000	
JP Score	0.118	0.000	0.000	0.012	0.000	0.000	0.000

As the table shows, scores on the need for achievement were significantly correlated with the EI, SN, and TF scales of the MBTI, as well as the scores for preference for innovation and risk taking propensity. In fact, the preference for innovation was significantly correlated with all of the other measures. Risk taking propensity scores were also significantly correlated to everything except the TF scale. From the perspective of the temperament scores, the SN scale performed the best in terms of significance for all three of the personality trait instruments. These findings led us to speculate about the ability of the cognitive temperament to drive the personality traits. The theoretical underpinning of our empirical analysis involved an understanding of the value of intuition in explaining entrepreneurial vision. The SN scale of the MBTI explicitly measures the degree of a respondent's reliance upon intuition in his or her cognitive processes. Accordingly, we conducted regression analyses employing the three personality traits as dependent variables and the SN score as independent variable. The results are displayed in Exhibit 8.

EXHIBIT 8					
Regression Analyses					
Dependent Variable: ACHIEVEMENT			Squared Multiple R: 0.031		
Variable	Coefficient	Std Error	Std Coef Tolerance	T	p
Constant	11.040	0.516	0.000	21.414	.000
SN	0.021	0.005	0.176 .100E+01	3.989	.000
Analysis of Variance					
Source	Sum of Squares	DF	Mean Sq	F Ratio	p
Regression	101.477	1	101.477	15.909	.000
Residual	3176.465	498	6.378		
Dependent Variable: INNOVATION			Squared Multiple R: 0.235		
Variable	Coefficient	Std Error	Std Coef Tolerance	T	p
Constant	4.332	0.805	0.000	5.383	.000
SN	0.102	0.008	0.485 .100E+01	12.378	.000
Analysis of Variance					
Source	Sum of Squares	DF	Mean Sq	F Ratio	p
Regression	2381.691	1	2381.691	153.222	.000
Residual	7740.957	498	15.544		
Dependent Variable: RISK TAKING			Squared Multiple R: 0.260		
Variable	Coefficient	Std Error	Std Coef Tolerance	T	p
Constant	-1.848	0.918	0.000	-2.013	.045
SN	0.124	0.009	0.510 .100E+01	13.241	.000
Analysis of Variance					

Source	Sum of Squares	DF	Mean Sq	F Ratio	p
Regression	3544.617	1	3544.617	175.324	.000
Residual	10068.333	498	20.218		

As the table shows, the SN scale was a significant predictor of the need for achievement, preference for innovation and risk taking propensity. The scale only explained 3% of the variance in the need for achievement, but it explained 23% of the variance in preference for innovation scores and 26% of the variance in risk taking propensity scores. The regression coefficients were positive except for risk taking: the greater the level of intuition, the stronger the need for achievement and preference for innovation. However, stronger sensing preference is associated with higher risk taking propensity. This last finding is at odds with the earlier descriptive statistics which suggest that intuitives have higher mean scores on risk taking than do sensing groups.

There is one final set of statistics which come to mind. If the SN score is so successful at predicting scores on the need for achievement, preference for innovation, and risk taking propensity scales, how do the other cognitive meters perform? To grapple with that question, we conducted a stepwise regression matching the four MBTI scales to the three personality trait measures. The results are displayed in Exhibit 9.

Stepwise regression is not an analytical technique which can produce conclusions because it ignores correlations among independent variables as they are entered into the regression equation. Nevertheless, stepwise regression can show whether additional study is justified. If the change in percentage of variance explained by a model is significant as the result of adding independent variables, that suggests that the additional variables merit further investigation. An insignificant change in explained variance suggests that additional variables are relatively unimportant to a model.

The table in Exhibit 9 shows that, in comparison to the other scales, the SN scale is the dominant determinant of all three personality traits. The SN scale accounted for 26% of the variance in risk taking in step 1, while the remaining three steps of the procedure only increased the R Square to 33%. The story is the same with innovation. The SN scale explained 24% of the variance in the innovation score, while three more regression steps could only raise the explanatory power to 28%. With regard to need for achievement, the SN scale only accounted for 3% of the variance in the instrument, however, two more regression runs could only raise the R Square to 6%. Clearly, the SN scale is the most important cognitive factor in understanding the personality traits.

We cannot lose sight of the fact that the percentage of variance explained by the SN cognitive scale is small. Explaining 26% of the variance means that 74% of the variance is unexplained. In other words, there are other factors, not included in this analysis which are clearly important in determining the strength of the independent variables in these models. This is an important consideration and one which requires additional research to understand.

**EXHIBIT 9 STEPWISE REGRESSION ANALYSES**

Achievement					
Step # 1					R Square: 0.031
Variable	Coefficient	Std Error	Std Coef Tolerance	F	p
SN	0.021	0.005	0.176 .1E+01	15.909	.000
Step # 2					R Square: .046
SN	0.023	0.005	0.196 0.97554	19.462	.000
TF	-1.016	-0.006	-0.126 0.97554	8.066	.005
Step # 3					R Square: .055
SN	0.019	0.006	0.162 0.86885	12.029	.001
TF	-0.016	-0.006	-0.127 0.97541	8.264	.004
EI	-0.014	-0.006	-0.100 0.88708	4.612	.032
Innovation					
Step # 1					R Square: .235
SN	0.102	0.008	0.485 .1E+01	153.22	.000
Step # 2					R Square: .264
SN	0.108	0.008	0.512 0.97554	172.69	.000
TF	-0.039	-0.009	-0.172 0.97554	19.48	.000
Step # 3					R Square: .273
SN	0.101	0.009	0.479 0.86885	135.84	.000
TF	-0.039	-0.009	-0.173 0.97541	19.92	.000
EI	-0.024	-0.010	-0.099 0.88708	5.98	.015
Step # 4					R Square: .276
SN	0.108	0.010	0.514 0.66375	119.96	.000
TF	-0.037	-0.009	-0.162 0.94508	17.03	.000
JP	-0.016	-0.011	-0.070 0.71674	2.39	.122
EI	-0.023	-0.010	-0.095 0.88221	5.41	.020
Risk Taking					
Step # 1					R Square: .260
SN	0.124	0.009	0.510 .1E+01	175.32	.000
Step # 2					R Square: .288
SN	0.131	0.009	0.537 0.97554	196.01	.000
TF	-0.044	-0.010	-0.168 0.97554	19.20	.000
Step # 3					R Square: .307
SN	0.111	0.011	0.457 0.74172	110.97	.000
TF	-0.051	-0.010	-0.193 0.94564	25.26	.000
JP	0.044	0.012	0.165 0.72069	14.01	.000
Step # 4					R Square: .328
SN	0.098	0.011	0.400 0.66375	78.24	.000
TF	-0.052	-0.010	-0.197 0.94508	26.93	.000
JP	0.048	0.012	0.177 0.71674	16.59	.000
EI	-0.042	-0.011	-0.153 0.88221	15.12	.000

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## CONCLUSIONS

Have we been able to explicate the entrepreneurship enigma? Not completely, but if the results of this study are confirmed by future research, we have made progress in describing the dancer and understanding the dance. The results of this study suggest that entrepreneurs are not homogenous. They may well be characterized by need for achievement, preference for innovation and risk taking propensity, but some of them are more highly driven than others. In fact, any given group of entrepreneurs is likely to contain such a distribution of individuals which makes drawing conclusions about their personality traits difficult. This problem may well be the basis for those who espouse abandoning trait research because it provides no insight into the entrepreneurial process.

Despite the problems which normally distributed trait strengths produce for researchers, there is much of value to be gained from understanding the entrepreneurial psyche. The process of any and all entrepreneurial action is the result of an individual's decision to take that action. That decision is rooted in personality and cognition. We must gain knowledge of that personality in order to support, train and educate the entrepreneur. The results of this study suggest that the core insight which can support an understanding of the entrepreneur is intuition. In every statistical test, the cognitive function of intuition served to form a basis for understanding the behavior patterns. Those entrepreneurs with stronger intuition translate that vision into innovative action. They are supported in the drive to activate the vision by high need for achievement. They are less dismayed in the face of risk and may well see their actions as less risky. They see what is not there and see it extremely well.

Those entrepreneurs with less intuition in their cognitive typologies will prefer a more concrete approach to the entrepreneurial process. They may be less creative than their intuitive brothers and sisters, but they will be more practical in their approaches to business. It is well established that sensing typologies make better managers but intuitive types make better change agents (Keirseey & Bates, 1984). Both can be highly driven by need for achievement, but sensing types are more cognizant of risk and generally less risk taking. They see what is not there less well and are more apt to focus on the concrete and the here and now.

The foregoing descriptions are simply of individuals at the two poles of the intuition continuum. In reality, most entrepreneurs will fall somewhere between those poles. What they see best will be what they focus upon and will form the basis for their individual approaches to the process of entrepreneurship. The process will be directed by the entrepreneurial vision. The depth and breadth of that vision varies along a normal distribution.

Consequently, in any given group of entrepreneurs we are likely to find a cross section of people with various intuitive strengths and levels of drives. This does not mean that we do not understand the dancer. In fact, it means that we understand the dancer quite well. Like the original artist from whom we borrow this imagery (Yeats, 1956) each dancer will interpret the dance differently. To teach them we must test their insight. Those with stronger intuitive leanings will benefit more from educational programs grounded in reality and based on cold, hard facts. Those with stronger sensing orientation will benefit more from educational programs designed to foster and support paradigm bridging actions. The former need structure

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for their vision and insight, the latter need vision and insight to which they can apply their structure. Both can dance, but both can benefit from wise programs which mitigate their weaknesses and concentrate on how to make the best decisions for their future success.

The entrepreneurial gestalt is truly that: a whole which is much greater than the sum of its parts and an outcome which transcends its inputs. We may never master the enigma, but we must recognize that to be ignorant of it is to forever limit our insight. Absent an understanding of the entrepreneurial psyche we are left with attempting to interpret outcomes and processes through our own cognitive typologies. Those of us with more sensing orientation are likely to view the entrepreneurial process more mechanistically and to focus on the planning and strategic management processes. Those of us with more intuitive leanings are more likely to interpret entrepreneurial behavior as the result of leaps of logic which sometimes defy description. Like the blind men describing the elephant, each of us will be right about some things, but none of us will see the whole. If intuition is the glue which supports entrepreneurial vision, as this research suggests, then it is even more difficult than describing the elephant. We are describing the heffalump, a creature no one has ever seen (Hull, Bosley & Udell, 1980), and we must approach the creature carefully because each of them will be different and each of them will be unique and each of us will only be able to see one small aspect of the whole.

It is this uniqueness that makes entrepreneurs the same and makes them so fascinating. That is the true enigma of entrepreneurship, the Gordian knot of our discipline. If we would understand these dancers, if we would interpret their dances, if we would explore how they see what is not there, then we must look for the commonalities in our work rather than the differences. Each of us contributes another piece to the puzzle. As yet, we cannot know the pattern, we cannot see the portrait, but working with and building on each other, we will solve the enigma. It is our collected minds and works which will serve as Alexander's sword.

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