

Testing A Psychological Typology: Relation To Subsequent Entrepreneurial Activity Among Graduate Students In Business Management

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Abstract

Previous studies indicate that among practicing entrepreneurs a four-way psychological typology consisting of personal achievers, real managers, expert idea generators, and empathic supersalespeople predicts firm growth and success. This research extends support for the typology to the process of firm initiation using a student sample. The results confirm that those students who possess any of the four patterns are more likely to become entrepreneurs; the more patterns possessed the greater this likelihood.

Introduction

Entrepreneurs and their firms are spread over a broad range and include many types, as reflected in the multiple typologies that exist. Discussions of these typologies are provided by Bird (4), Gartner (7), Gartner, Mitchell, and Vesper (8), Woo, Cooper, and Dunkelberg (42) (43), and Steiner and Miner (38). In some cases these typologies focus on successful entrepreneurs, either explicitly or implicitly, but in most cases they are concerned with existing ventures whether successful or not. Although a few typologies relate in part to psychological characteristics of the entrepreneur, this is not typical, and none are focused entirely on differences in entrepreneurial personality. The research presented here is concerned with the existence of entrepreneurial activity, and with personality make-up.

During the 1960s, research by McClelland dealing with the relationship between achievement motivation and entrepreneurship offered considerable promise (16) (17) (18). Yet by the 1990s Guth (9) was disposed to write off the personality connection entirely, on the grounds that other more promising avenues for study existed. He was not alone in this conclusion, even then, and in fact this pessimism regarding the influence of personality factors on entrepreneurial activity continues in the writing of Eggers (6) to the present day.

Yet at the same time a rather sizable body of research has accumulated lending support to the achievement motivation theme. Examples may be found in the work of Roberts (34), Bellu (1) (2), Bellu and Sherman (3), and Miner, Smith, and Bracker (30) (31) (32). Several positive reviews of the research on personality factors have appeared recently as well, including those of Caird (5) and Naffziger (33). Johnson (11) and Keats and Bracker (12) are among those who

have incorporated personality variables in more comprehensive theories of entrepreneurial firm performance.

Clearly the entrepreneurship field has exhibited considerable inconsistency and even conflict in this area. A major problem has been that while the field was moving to an approach to theorizing based on typologies, reflecting the diversity of firm types, the psychological sub-field seemed to be focused on a single type of entrepreneur.

To deal with this apparent disparity I have recently proposed a four-way psychological typology of successful entrepreneurs. This typology draws in part on the existing literature, but also on my personal experience in working with entrepreneurs as well. One longitudinal test of this typology has been carried out, yielding very promising results with a sample of established entrepreneurs; this research has been reported elsewhere (25) (26) (27) (28) (29) in varying degrees of depth and intended for somewhat differing audiences.

This previously reported research dealt with the extent to which existing firms experienced growth and thus success over a period of time subsequent to the point at which the entrepreneur's standing on the typology was established via psychological testing. It did not, however, consider the extent to which individuals with varying positions relative to the typology are likely to engage in entrepreneurial activity of the kind represented by initiating a venture. That requires a very different sample than the established entrepreneurs, although still necessitating a longitudinal study design.

The present research was undertaken to close this gap in the research evidence, and thus to test hypotheses derived from the typology in the area of venture initiation, rather than venture success. These hypotheses are as follows:

1. Personality characteristics, as measured by personality tests and questionnaires, are effective predictors of the subsequent entrepreneurial activity of individuals.
2. There are four types of people who are particularly likely to engage in entrepreneurial activity—1) personal achievers, 2) real managers, 3) expert idea generators, and 4) empathic supersalespeople—each of which may be defined in terms of a set of personality test and questionnaire results.
3. The greater the number of these key personality patterns present, defined by psychological tests and questionnaires and extending from 0 to 4, the more likely that an individual will engage in entrepreneurial activity subsequently.

Methodology

Sample

The 159 subjects were accumulated over a five-year period among participating MBA ($N=141$) and Ph.D. ($N=18$) students in a graduate entrepreneurship course at the State University of New York at Buffalo. The course was offered six times in this period with additions to the sample of 26, 22, 30, 29, 22, and 30 each time.

Although there were occasional differences on individual measures, none of the independent or dependent variables exhibited any significant differences across these six classes. Thus, combining the data over the five years is appropriate.

These students may be designated as potential entrepreneurs because they chose the course, presumably out of an interest in the subject. None were required to take it as a part of a major or program of study. The primary source of attraction was the opportunity to learn more about entrepreneurship so as to evaluate it as a career alternative.

Of the 159 subjects, 108 (68%) were males and 51 were females. The mean age was 27.4 and the standard deviation 5.7. The largest number of students in the course were marketing majors—22%. This was followed by finance (20%), human resources and organizational behavior (18%), and a general MBA (15%). The only other sizable group was systems majors, which included manufacturing, at 11%.

Test Battery

The test battery was administered in class as the course began. The variables measured, their relation to the four types, and the way raw scores were converted so as to yield scores for each type were as follows:

Personal achiever type—

Strong motivation for self-achievement (*Miner Sentence Completion Scale—Form T: Self Achievement* Subscale) (22) (24). Scorer reliability is .96 and test-retest reliability .91. Validity has been established against criteria of entrepreneurial firm growth, and the subscale also differentiates between entrepreneurs and managers. Using the norms for the subscale, conversion scores were established as follows: -8 to +1=0, +2 and +3=1, and +4 to +8=2.

Type A personality (*Individual Behavior Activity Profile*) (14) (15). Based on scoring guidelines established by the authors, the conversion scores were: 0 to 44=0, 45 to 59=1, and 60 to 75=2.

Desire for feedback on achievements (*Miner Sentence Completion Scale—Form T: Feedback of Results* Subscale) (22) (24). Scorer reliability is at .94 and the test-retest value .66. Higher scores have been found to be predictive of firm growth and also to differentiate entrepreneurs from managers. Employing the normative sample as a guide, the conversion scores were: -8 to -1=0, 0 and +1=1, and +2 to +8=2.

Desire to plan and set goals for future achievements (*Miner Sentence Completion Scale—Form T: Planning for the Future* Subscale) (22) (24). This is the third and final subscale from the MSCS-T used to measure the personal achiever type. The scorer reliability is .91 and the test-retest value .78. The Planning for the Future measure differentiates entrepreneurs from managers, predicts firm growth, and is related to the use of formal planning. Conversion scores were established as follows: -8 to 0=0, +1 and +2=1, and +3 to +8=2.

Strong Personal Commitment to the Venture (*Miner Sentence Completion Scale—Form P: Professional Commitment* Subscale) (21) (24). The Professional Commitment subscale was constructed to measure commitment to a profession. However, because of the projective nature of the instrument, the items are general in nature and appear to deal with any type of commitment, including commitment to an organization or venture. The close association between professional and organizational commitment has been demonstrated by Wallace (41). The subscale has a scorer reliability of .98 and has shown considerable validity as a predictor of professional success. Using available norms, conversion scores were calculated as follows: -8 to +1=0, +2 and +3=1, and +4 to +8=2.

Desire to Obtain Information and Learn (*Miner Sentence Completion Scale—Form P: Acquiring Knowledge* Subscale) (21) (24). Although acquiring knowledge is an important component of professional motivation, it is also very important to the personal achiever. In the one case the knowledge is highly specialized, in the other it is generalized, but the need for knowledge is no less significant. The subscale, again because of its projective nature, deals with knowledge per se, not any specific type. The scorer reliability for the subscale is .90, and it has been shown to relate to professional success indexes. The equations used to produce conversion scores were: -8 to +1=0, +2 and +3=1, and +4 to +8=2.

Internal Locus of Control (*Levenson Internal-External Instrument: Internal Control* Scale) (13). The test-retest reliability of this scale is .64. The conversion scores were: 8 to 39=0, 40 to 42=1, and 43 to 48=2.

Internal Locus of Control (*Levenson Internal-External Instrument: Powerful Other External Control* Scale) (13). This scale has a test-retest reliability of .74 and is negatively correlated with the internal scale. Personal achievers would be expected to have low scores, and thus the scale is reversed in setting up conversion scores. These were set as follows: 18 to 48=0, 14 to 17=1, and 8 to 13=2.

Internal Locus of Control (*Levenson Internal-External Instrument: Chance External Control* Scale) (13). The scale has a test-retest reliability of .78. It is negatively correlated with the internal scale and strongly positively correlated with the powerful other measure ($r =$

.59). Again, using reverse scoring, the conversion score equations were: 16 to 48=0, 13 to 15=1, and 8 to 12=2.

These nine measures, containing 79 test items, were used to create a *Personal Achiever Score* by adding the conversion scores. The mean was 5.3, the standard deviation 3.1, and the actual score range 0 to 15 out of a possible 0 to 18. The personal achiever type was defined as a person with a score of 10 or above.

Real manager type—

Positive Attitudes Toward Authority (*Miner Sentence Completion Scale—Form H: Authority Figures* Subscale) (19, 24). The median scorer reliability from a number of sources for the Authority Figures subscale is .92 and the best estimate of the test-retest reliability is .67. The subscale differentiates managers from non-managers and predicts managerial success with well above chance frequency. Using existing norms as a guide (23), conversion scores were set as follows: -5 to +1=0, +2=1, and +3 to +5=2.

Desire to Compete with Others (*Miner Sentence Completion Scale—Form H: Competitive Situations* Subscale) (19) (24). There are two measures of competitiveness in the MSCS-H of which this is the more general. The best estimate of scorer reliability is .91 and of test-retest reliability .76. As with the other subscales of the MSCS-H, both concurrent and predictive validity are well established. Competitive Situations, in fact, has been the most consistently valid across studies of the seven subscales. Conversion scores were created as follows: -5 to 0=0, +1=1, +2 to +5=2.

Desire to Compete with Others (*Miner Sentence Completion Scale—Form H: Competitive Games* Subscale) (19) (24). This measure contains items that refer to games of various sorts; such items are not included in the Competitive Situations subscale. Because this is a projective test, the fact that the items focus on something other than managerial competition is to be expected, and should not pose a problem. The validity evidence supports this conclusion. The median scorer reliability is .94 and the test-retest correlation is .79. The conversion equations were: -5 to +2=0, +3=1, and +4 and +5=2.

Desire to Assert Oneself (*Miner Sentence Completion Scale—Form H: Assertive Role* Subscale) (19)(24). The subscale has a scorer reliability of .91 and a test-retest figure of .86. Validity evidence is strong. Conversion scores were calculated as follows: -5 to +1=0, +2=1, and +3 to +5=2.

Desire to Exercise Power (*Miner Sentence Completion Scale—Form H: Imposing Wishes* Subscale) (19) (24). Scorer reliability for this subscale is .83 and test-retest reliability .75. In terms of validity this is one of the best MSCS-H subscales. It comes in just behind Competitive Situations among the seven subscales in the frequency with which it predicts relevant criteria. The conversion equations were: -5 to +1=0, +2=1, and +3 to +5=2.

Directive in Cognitive Style (*Decision Style Inventory: Directive*) (35). The DSI has a test-retest reliability of .70. The directive measure, in contrast to the other three—

analytical, conceptual, and behavioral—is the best predictor of managerial success. Based on score ranges given by the authors conversions were made as follows: 20 to 81=0, 82 to 89=1, and 90 to 160=2.

Desire to Stand Out from the Crowd (*Miner Sentence Completion Scale—Form H: Standing Out from the Group* Subscale) (19) (24). The scorer reliability for this subscale is .91 and the test-retest value .85. Although the Standing Out from Group measure has demonstrated good validity in predicting managerial criteria, significant results are obtained less frequently than with the other subscales of Form H. Using the norms the conversions were: -5 to +1=0, +2=1, and +3 to +5=2.

Desire to Perform Managerial Tasks (*Miner Sentence Completion Scale—Form H: Routine Administrative Functions* Subscale) (19) (24). The subscale has a scorer reliability of .90 and a test-retest correlation of .86. It predicts managerial criteria well. The conversion scores are: -5 to +1=0, +2=1, and +3 to +5=2.

These eight measures containing 55 items, were used to construct a *Real Manager Score* consisting of the sum of the conversion scores. The mean was 2.4, the standard deviation 1.8, and the actual score range 0 to 9, where 0 to 16 was possible. A score of 5 or above defined the real manager type.

Expert idea generator type—

Desire to Personally Innovate (*Miner Sentence Completion Scale—Form T: Personal Innovation* Subscale) (22) (24). Scorer reliability is .93, and test-retest reliability .76. Validity against entrepreneurial criteria such as firm growth and survival is good. From the test norms conversions were established as follows: -8 to +2=0, +3 and +4=1, and +5 to +8=2.

Conceptual in Cognitive Style (*Decision Style Inventory: Conceptual*) (35). This style in conjunction with the directive is described by the authors as typical for entrepreneurs. Their recommended score ranges translate to the following conversion scores: 20 to 86=0, 87 to 94=1, and 95 to 160=2.

Conceptual in Cognitive Style (*Problem Solving Questionnaire: Intuition*) (37). This measure has the same theoretical origins as the previous one. Conversion scores were established as follows: 0 to 4=0, 5 and 6=1, and 7 and 8=2.

High Intelligence (*Vocabulary Test G-T: Forms A and B*) (20) (39) (40). This test was designed to be used by public opinion interviewers in conducting surveys where an intelligence measure is desired. The test-retest reliability is in the mid-.80s. It is a good indicator of general intelligence. Using norms for the population as a whole, the conversions were: 0 to 28=0, 29 to 33=1, and 34 to 40=2.

Desire to Avoid Taking Risks (*Miner Sentence Completion Scale—Form T: Avoiding Risks* Subscale) (22) (24). This final MSCS-T subscale has a scorer reliability of .94

and a test-retest value of .86. High scores indicative of a desire to avoid taking risks have generally been found to characterize entrepreneurs heading high growth firms, even though this is a counterintuitive position. Risk avoidance appears to counteract the impulsive enthusiasm of innovative expert idea generators. Conversion equations were: -8 to $0=0$, $+1$ and $+2=1$, and $+3$ to $+8=2$.

Desire to Avoid Taking Risks (*Shure and Meeker Risk Avoidance Scale*) (10) (36). The scale is part of a larger instrument that has been employed widely in studies of bargaining behavior. Split-half reliability appears to be in the .70s. Based on the level of response alternatives, conversion scores were set as follows: 17 to 36=0, 37 to 40=1, and 41 to 51=2.

These six measures contain 101 items and are employed to yield an *Expert Idea Generator Score* by adding the conversion scores. The mean is 3.2, the standard deviation 1.7, and the range 0 to 8 from a possible 0 to 12. The expert idea generator type is a person with a score of 5 or above.

Empathic supersalesperson type—

Empathic in Cognitive Style (*Decision Style Inventory: Behavioral*) (35). This is the third measure from the DSI beyond the directive and conceptual, to be employed. Conversion scores were based on author recommendations and were set as follows: 20 to 61=0, 62 to 69=1, and 70 to 160=2.

Empathic in Cognitive Style (*Problem Solving Questionnaire: Feeling*) (37). This is conceptually the same measure as that of the Behavioral DSI. Based on the scoring instructions, the conversion scores were: 0 to 3=0, 4 and 5=1, and 6 to 8=2.

Desire to Help Others (*Miner Sentence Completion Scale—Form P: Providing Help* Subscale) (21) (24). Scorer reliability is .91 and the subscale has proven valuable as a predictor of various criteria of professional success. This appears to result from the nature of the relationship professionals have to their clients, patients, students, etc. The same type of relationship appears to hold for empathic supersalespeople in dealing with customers. Using available norms, conversion equations may be established as follows: -8 to $+3=0$, $+4=1$, $+5$ to $+8=2$.

These three measures, which have 36 test items in total, produce the *Empathic Supersalesperson Score* in that the three inherent conversion scores are summed. The mean is 2.1, the standard deviation 1.7, and the actual range the full 0 to 6 which is possible. Any score of 3 or above is sufficient to identify the empathic supersalesperson type.

Those who have multiple patterns (2 to 4) are called complex entrepreneurs. There are 25 such students (21 with two patterns, 3 with three, and 1 with four). In addition a *Composite Score* was calculated to measure complexity by adding the conversion scores from the four types. The mean such score was 12.9, the standard deviation 4.7 and the found score range 4 to 28, as against a possible 0 to 52. Here any score of 20 or above defined a complex entrepreneur.

Within the student sample the cutting scores indicated produce 10 percent who are personal achievers, 10 percent who are real managers, 25 percent who are expert idea generators, 38 percent who are empathic supersalespeople, and 9 percent who are complex entrepreneurs on the composite criterion. On all of these indexes, except the empathic supersalespeople, the students produce many fewer of a type than have been found in studies of established, practicing entrepreneurs.

Criteria of Entrepreneurial Activity

The test measures noted were related to subsequent post-graduation information on entrepreneurial activity. Did these people go out and found a business when they first had an opportunity to do so? Or, in a few cases, were they continuing in a venture that they had started prior to or during the time they were attending classes? To answer this question we waited until we knew the student had left the university (in almost all cases with a degree) and then attempted to contact the individual first via letters and if that failed, with telephone calls. On the average, contact, if made, occurred a year after leaving the university.

Of the 159 students, 8 could not be used in the study because they were still in student status as the research ended. Another 36 students simply were lost. We tried to locate them and to find out about their employment status, but it proved impossible to do so. Thus, the follow-up sample actually numbered 115. In 85 of these cases (74%) we could find no evidence of entrepreneurial activity. The remainder were engaged in entrepreneurship as follows: part time participation in a business startup (usually in conjunction with some other job)—17 (15%); full time participation in a business startup—8 (7%); engaged in teaching and/or research in the entrepreneurship area—5 (4%).

The latter category was included to accommodate those among the Ph.D. students who were in fact engaged in a type of entrepreneurial activity. We have found that university faculty in the entrepreneurship area often do have personality profiles consistent with actual entrepreneurial performance. It is consistent with this fact that many have started businesses. Little is known about the success of all of these varied ventures, only that they were created.

Results

Table 1, which compares those who possess each of the strong patterns with those who are lacking in these regards, consistently supports hypotheses 1 and 2. It also provides some support for hypothesis 3 regarding complexity in the last two comparisons. Note, however, that entrepreneurial activity is much more pronounced among personal achievers and real managers than among expert idea generators and empathic supersalespeople. This may be a function of the timing of the follow-up measure.

Table 1
Evidence of Entrepreneurial Activity Post-graduation for
Those Who Lack and Possess Strong Patterns

Personality Make-up	No Evidence of Entrepreneurial Activity		Evidence of Entrepreneurial Activity		Totals		Chi-square Versus Those Who Lack Any Pattern
	N	%	N	%	N*	%	
Lack Any Strong Pattern	36	95	2	5	38(18)	100	—
Possess Personal Achiever Pattern	4	31	9	69	13(3)	100	23.48 <i>p</i> <.01
Possess Real Manager Pattern	4	36	7	64	11(4)	100	19.66 <i>p</i> <.01
Possess Expert Idea Generator Pattern	19	61	12	39	31(9)	100	11.77 <i>p</i> <.01
Possess Empathic Super-salesperson Pattern	26	63	15	37	41(15)	100	13.05 <i>p</i> <.01
Possess Multiple Patterns	6	32	13	68	19(6)	100	26.06 <i>p</i> <.01
Possess High Composite Score	1	9	10	91	11(2)	100	33.75 <i>p</i> <.01

*Numbers in parentheses indicate additional cases with missing data.

The evidence for the value of complexity is reinforced in another way by the data of Table 2. Unfortunately, the minimal number of three and four-pattern individuals restricts the usefulness of these findings for testing the hypothesis that increasing numbers of strong patterns result in increasing performance on entrepreneurial criteria. However, as far as it goes the information in Table 2 does support that hypothesis. Entrepreneurial activity increases from 5% with no strong pattern, to 28% with one, to 68% with two or more.

Conclusions

This is in a sense a replication of the prior study carried out with established entrepreneurs and a growth criterion. Yet it is different as well, primarily in that the criterion is now closely tied to venture initiation and the sample includes many who are at best potential entrepreneurs. The results from the two studies, however, are the same. Both support the typology and its extension to hypotheses regarding the special power of the complex entrepreneur concept.

TABLE 2
**Evidence of Entrepreneurial Activity Post-graduation for
Those With Varying Numbers of Strong Patterns**

	Number of Strong Patterns Possessed					
	0		1		2-4	
	N	%	N	%	N	%
Evidence of Entrepreneurial Activity	2	5	15	28	13	68
No Evidence of Entrepreneurial Activity	36	95	39	72	6	32
Totals	38(18)	100	54(16)	100	19(6)	100
$\chi^2(df=2)$			25.92, $p < .01$			

In addition, the minimal entrepreneurial potential of these students should be noted. This is a graduate program with a primarily corporate emphasis. The course is the only one dealing with entrepreneurship available to these students, and taking it is entirely voluntary. Accordingly, the students involved in this study would be expected to be the most entrepreneurial of those in the graduate program as a whole. Yet even in such a self-selected sample there are repeated indications that this is not a high potential group insofar as entrepreneurial endeavor is concerned. In all likelihood this occurs due to the primarily corporate emphasis, and reputation, of the overall program. A graduate program devoted to entrepreneurship in all of its aspects would be expected to attract more entrepreneurial talent. However, we do not know that for certain. That is a research agenda for the future.

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