Measuring the Entrepreneurial Mindset: The Development of the

*Entrepreneurial Mindset Profile (EMP)*

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Introduction

The past decade has seen a striking amount of interest in all things entrepreneurial—entrepreneurs themselves, the entrepreneurial mindset and entrepreneurial ventures large and small. Business writers have hailed entrepreneurship as a crucial engine for economic growth, describing it, for example, as a “game-changing concept” that can help existing businesses succeed in the face of overseas competition (Lewis, 2012). Others see it as even more important, as illustrated by this bold claim: “If we're going to emerge from the worldwide economic slump, entrepreneurs will lead the way.” (Badal & Streur, 2012)

And the entrepreneurial mindset is no longer the exclusive property of business owners. Increasingly, corporations are seeking, nurturing, and rewarding entrepreneurially-minded employees, sometimes known as “intrapreneurs,” and critically examining the degree to which their corporate cultures allow entrepreneurial thought and action to flourish (Morris, Kuratko, & Covin, 2008). Even students are getting into the act. College degrees in entrepreneurship have been proliferating rapidly. Since 2006, the Princeton Review and Entrepreneur magazine have partnered to name the top entrepreneurship programs in the country; in 2012, they named 50 at the undergraduate level and 50 at the graduate level. Even President Obama has called for "entrepreneurship" to be included with "problem-solving" and "critical thinking" as 21st century skills to be incorporated into education standards and assessments (Obama, 2009).

Despite this wide level of interest, however, there is currently little consensus regarding the hallmarks of the entrepreneurial mindset. Much of what’s been written about entrepreneurs is largely theoretical or anecdotal; especially in the age of the blog, there’s no shortage of experts (both genuine and self-proclaimed) weighing in on “the five keys to entrepreneurial success,” or “the three absolutes of a truly entrepreneurial mindset.” We’re not suggesting that these ideas
are without merit, but rather that as scientist-practitioners, we were most interested in what the data had to say. Even the empirical work we could find on the topic is not as comprehensive or as universally high-quality as we might have hoped. As noted by Hisrich, Langan-Fox, and Grant (2007), the search for individual differences between entrepreneurs and non-entrepreneurs, and between more and less successful entrepreneurs, has produced a rather inconsistent body of evidence. So, we designed a project to identify a set of variables that clearly distinguish between entrepreneurs and non-entrepreneurs, and to create a tool to measure these variables.

This paper outlines the process by which we developed this assessment of entrepreneurial mindset, and describes the resulting assessment itself, which we named the Entrepreneurial Mindset Profile (EMP).

**Research Approaches**

Research efforts designed to understand the entrepreneur have taken a variety of forms, some of them quite clearly and narrowly focused on entrepreneurship per se, and others more generally concerned with related concepts such as innovation and creativity. There are some obvious differences between these two research traditions. For example, the more purely entrepreneurial research has included attention to a variety of structural and economic factors that may influence the chances of entrepreneurial success, such as demand for particular goods and services (e.g., Eckhardt & Shane, 2003). Innovation/creativity research has tended to focus on more “micro” situational characteristics such as structure of the work team (e.g., Payne, 1990) or team climate (DeDreu & West, 2001). However, both types of research have had something to say regarding the individual characteristics that may be beneficial for entrepreneurs or intrapreneurs.
For example, for at least three decades it has been hypothesized that certain personality characteristics may distinguish entrepreneurs from non-entrepreneurs, or in the case of innovation/creativity research, distinguish between more and less creative people. Some of the most frequently suggested characteristics are self-confidence (e.g., Barron & Harrington, 1981), openness to experience (e.g., George & Zhou, 2001), tolerance for ambiguity (e.g., Patterson, 1999), independence (e.g., West, 1987), locus of control (e.g., Frese, Teng, & Wijnen, 1999) proactivity (Seibert, Kraimer, & Crant, 2001) need for achievement (e.g., Rauch & Frese, 2007), risk acceptance (e.g., Rauch & Frese, 2007), unconventionality (e.g., West & Wallace, 1991), and ideational fluency (e.g., Barron & Harrington, 1981).

More recently, there has also been considerable interest in identifying the cognitive strategies and knowledge structures that differentiate entrepreneurs from non-entrepreneurs (or successful entrepreneurs from unsuccessful ones); this approach has generally been described as the study of entrepreneurial cognition. Some of the phenomena studied under this heading are risk perception as opposed to risk acceptance (e.g., Busenitz, 1999), the use of cognitive heuristics (e.g., Keh, Foo, & Lim, 2002), and opportunity recognition (e.g., Baron, 2006). One factor contributing to the interest in entrepreneurial cognition is the possibility that such cognition can be altered through education and training (Hisrich, Langan-Fox, & Grant, 2007), as opposed to personality traits, which are generally thought to be less susceptible to such intervention. Thus, we refer to these variables as skills rather than personality traits.

The Current Project

Our reading of the extant literature led us to the following conclusions: 1) that entrepreneurs probably possess certain personality characteristics that differentiate them from
non-entrepreneurs, and that these characteristics are not likely to be amenable to change—at least not to a great extent or within a short time frame; and 2) that entrepreneurs probably possess other characteristics having to do with cognitive style and problem solving that might be more malleable, and which might therefore be good candidates for development intervention. Thus, we sought to develop an assessment instrument that would measure both sets of constructs. The first set can be thought of as those largely innate features of the individual that would make him or her more likely to be drawn toward entrepreneurial endeavors; the second set can be thought of as those more malleable features of the individual that would make him or her more likely to be successful as an entrepreneur.

Method

The first step in this process was to identify scales that fall into each of the two categories, and to then create items to measure those scales. Based on our reading of the literature, we settled on 14 scales, 7 in each category. Table 1A displays these scales. The initial version of the instrument consisted of 118 items (with the number of items per scale ranging from 8 - 10). For each item, respondents were asked to indicate how well it described them on a 5-point scale running from does not describe me well to describes me very well. This version was administered online to a convenience sample of 300 working adults primarily living in the Tampa-St. Petersburg area. Item analyses and exploratory factor analyses were carried out on the resulting data.

Based on these analyses a second version was created, in which some items were deleted, other items were revised, and some new items were written. This version also consisted of 14 scales, but the nature of the scales changed somewhat. In part this was based on our analysis of
the responses to the first version; we also made some changes based on our continuing examination of the literature and conversations with thought leaders in the entrepreneurial space. First, we added a scale to assess the willingness to accept risk because that variable had been lacking from the first version. Second, we added a scale assessing interpersonal sensitivity, despite that fact that the literature on entrepreneurial mindset was mute on this point. Since many entrepreneurial ventures are launched by multiple founders rather than the stereotypical “solopreneur,” it seemed quite possible that interpersonal skills would prove to be important. Such skills have also been found to contribute meaningfully to leadership effectiveness, and we were frankly curious to see how entrepreneurs would fare in this regard.

Table 1B displays the 14 scales (with short descriptions) making up the second version of the instrument. The second version of the instrument consisted of 115 items (with the number of items per scale ranging from 7 – 10). Importantly, our approach to collecting and analyzing responses to this second version of the instrument was fundamentally different than the approach we used with the first version. Specifically, for the first version of the instrument we were content with a convenience sample, since we simply wanted to assess the statistical properties of our initial items and scales in order to revise and improve the content. For the second version, however, we needed to collect responses from two specific kinds of people: entrepreneurs and corporate managers. Only by collecting data from actual entrepreneurs and actual non-entrepreneurs (yet still gainfully employed adults) did we feel we could ensure that we were assessing dimensions that went beyond statistical integrity and theoretical interest, and also represented dimensions that were empirically and uniquely characteristic of actual entrepreneurs.

Thus, a second version was administered to 725 working adults (448 male; 277 female) drawn from approximately 50 different organizations. The organizations we invited to
participate were identified as being good “sources” of either entrepreneurs (e.g., the Tampa Bay Technology Forum’s Entrepreneur Network) or of corporate managers. In the latter category, we invited participation from some of our large client organizations; many of these organizations were in the energy, financial services, or hospitality sectors.

Following collection of these data, we had two main tasks. First, we had to confirm that the scales had strong psychometric properties. Second, we had to determine whether or not they actually differentiated between entrepreneurs and non-entrepreneurs. If any scale did not meet both criteria, it would not be included in our final version of the EMP. Thus, we again carried out item analyses and factor analyses on the responses of these participants, the results of which allowed us to determine which scales and items should move on to the next phase of analysis. Because all of the fourteen scales had adequate to good internal reliability, with Cronbach alpha values ranging from .67 to .85 (and only one value falling below .70), they all moved on to our second phase of analysis.

To determine which of these fourteen scales did actually discriminate between entrepreneurs and non-entrepreneurs, we identified two distinct groups of people. The entrepreneur group was made up of individuals who: 1) had self-identified as entrepreneurs on the questionnaire, 2) had indicated that they owned or co-owned a business, and 3) were not full-time students. The corporate manager group was made up of individuals who: 1) worked for organizations, 2) did not self-identify as entrepreneurs, 3) did not indicate that they owned or co-owned a business, and 4) indicated that they had at least two people who worked for or reported to them. Because we had solicited only entrepreneurs and corporate managers for participation in this phase of our research, we were expecting to include almost all of the 725 respondents in one of our two norm groups. However, only 330 of the respondents met all the criteria for
inclusion in one of the groups. (One common disqualifying pattern was corporate managers who identified themselves as entrepreneurs—or said they weren’t sure if they were entrepreneurs—even though they didn’t own or co-own even a small business.)

Although the initial norm groups were therefore smaller than expected, we proceeded to examine which of the 14 scales did in fact differentiate the two groups at statistically significant levels. Although we had expected to find some reliable differences, we were frankly surprised to find that entrepreneurs and non-entrepreneurs showed statistically significant differences (at the $p < .01$ level or better) on each of the 14 scales. The entrepreneurs scored significantly higher on every scale except the Interpersonal Sensitivity scale, on which they scored significantly lower than non-entrepreneurs. Thus, we retained all 14 of the scales for the final version of the instrument. Twelve of the scales contain five items, and two of the scales (Action Orientation and Nonconformity) contain six items; the final version of the EMP therefore contains a total of 72 items, 31 of which are negatively scored. Table 2 displays the means and standard deviations of the entrepreneur and manager groups for each of the 14 scales. (The larger N’s for the two norm groups reflect the fact that since the initial development of the EMP, we have collected additional data from both entrepreneurs and corporate managers. All 14 scales continue to show statistically significant differences between entrepreneurs and corporate managers. As more people take the EMP, we will regularly update the norm group scores for the purposes of both research and report generation.)

Discussion

As a result of these findings, we are confident that the EMP is measuring a set of constructs that differentiates entrepreneurs from non-entrepreneurs, and that it does so in a
psychometrically sound fashion. The next logical question, of course, relates to the utility of the assessment.

At this point, we see three primary uses for the EMP: 1) as a tool to help organizations assess and develop the entrepreneurial capacity of their employees; 2) as a tool for coaching entrepreneurs; 3) as a source of data that will be useful for college students who are studying and/or pursuing entrepreneurship; and 3) as a tool for advancing the science of entrepreneurship.

Organizational Applications

It was actually based on our own need for an entrepreneurial assessment tool that we initially decided to create the EMP. We were designing a customized leadership development program for a senior leadership team from a global organization. The leader of this team was highly invested in developing his team’s entrepreneurial skills as a means of driving organic growth. At that time, we were unable to find what we considered to be a psychometrically solid, 360-degree assessment of entrepreneurial mindset. Although we didn’t have the time necessary to develop the EMP for this particular program, the experience—along with other queries we’d received in the past—convinced us that there would be value in such an assessment.

The self-report and group versions of the EMP have been available since April of 2013, and a 360-degree version is being considered for the future. Although the self-report was designed to be highly self-explanatory and can be purchased directly, we encourage leaders, consultants, and coaches to get certified in the assessment if they plan to use it with groups or on a wider scale within organizations. Both versions of the EMP may be used separately or in combination, depending on the goals of the developmental initiative.
Individuals can purchase and complete the self-report version of the EMP through the EMP website (www.emindsetprofile.com). Upon completing the assessment, users receive a link to their individual Feedback Report. This Feedback Report displays their scores in comparison to the entrepreneur and corporate manager norm groups on all 14 scales. (See two pages from a Sample Report in Appendix A.) They also receive a comprehensive Development Guide which includes sections on interpretation, developmental suggestions, recommended resources, and action planning.

Within corporate settings, the instrument can be employed in individual coaching, team building, and open enrollment and customized leadership programs. Developmental focus areas for which the EMP may provide valuable and relevant data — at any of these levels — include strategic thinking, innovation, growth leadership, change management, career planning, and talent development.

At an individual level, high scores on the EMP may not only represent strengths that can be leveraged in pursuit of important professional goals, but should also be examined for potential overuse; it is easy to imagine how the behaviors associated with any given scale could be overplayed. A leader with a very high score on Persistence, for example, may be able to use that skill for both individual and team benefit at times when sustained and determined effort is necessary, but this same skill—when overused—may result in a failure to recognize when it’s time to let go of an idea or initiative that is just not going to work. This example also highlights the importance of context in interpreting EMP scores; what works well in one context—situational, functional, organizational, temporal or cultural—may not work well in another.
At the team level, the EMP can be used in creative ways, although here too context will be important. Depending on the particular kind of work team (sales, operations, finance) different aspects of the EMP will vary in importance; what is highly valuable for some teams will be less so for others. Moreover, for some dimensions the most important thing may be to have at least some members of the team sufficiently high. Idea Generation is perhaps the clearest example of this, but it may be true for others as well. Although we believe that it is possible for individuals to develop skills in areas in which they have relatively little natural capacity, team membership often allows for a complementary approach. As long as the range of necessary skills are represented somewhere in the team, each individual has the luxury of utilizing and enhancing existing strengths. Thus, it may be impossible to “create” entrepreneurs, but it is certainly possible to create entrepreneurial teams.

We offer one caution with regard to the use of the EMP in corporate settings: that the EMP be used primarily for development as opposed to selection. Given the face validity of the items, individuals not motivated to be candid would find it fairly easy to manipulate their responses to the EMP items. Until and unless the EMP proves to have predictive validity in hiring decisions, we recommend that it not be used for such decisions. We do think, however, that the EMP could be a useful tool for selecting from among existing employees the ones best suited for roles on project teams, with the specific scales examined to depend on the nature of the project. For example, an organization interested in staffing project teams to develop and implement a new strategic plan would likely seek high scorers on different EMP dimensions to put together teams responsible for 1) creating the strategic plan (Future Focus and Idea Generation), 2) aligning the organization behind the strategic plan (Optimism and Interpersonal
Sensitivity), and 3) leading the actual implementation of the plan (Action Orientation and Execution).

Entrepreneurs

Although the EMP was originally developed for use with corporate leaders, it can also be used in coaching with entrepreneurs and aspiring entrepreneurs. Even experienced entrepreneurs can benefit from gaining additional insight into their unique profile of strengths. Also, EMP group reports—when used in conjunction with individual reports—can help business co-founders or co-owners better understand and leverage their individual and collective assets. Finally, practitioners who work with family-owned businesses may find the EMP especially useful for succession planning; while multiple family members may express an interest in taking on the top leadership role during a time of transition, the EMP can help distinguish between those who have the right “wiring” and skill set and those who don’t.

College and University Students

There are numerous applications for the EMP in educational settings. Teachers and administrators from colleges and universities that have either academic or non-credit-bearing programs in entrepreneurship can use the EMP to help students understand both the concept of entrepreneurial mindset as well as their own unique profiles. This exercise may be useful for students who either are, or are planning to, major or minor in entrepreneurship, as well as for students who are seeking even broader academic and career direction. The EMP may be administered and presented in group settings or used by advisors and career counselors in one-to-one sessions. The EMP may also have value as a pre- and post-test measure of the impact of
entrepreneurship curricula. A number of entrepreneurship educators are currently piloting the EMP for this purpose.

**Research Initiatives**

The third use for the *EMP* is to advance the science of entrepreneurship. Although there are a variety of possible directions for future research involving the EMP, there are three areas especially important to us. The first of these is research comparing the personality and skill domains. The EMP distinguishes between relatively stable personality scales and more malleable skill scales, but this distinction currently rests more on theoretical supposition than it does on empirical evidence. Thus, one important avenue for research will be to evaluate this distinction. For example, do the skill and personality dimensions differ in their temporal stability? Although the skill measures should display some stability, it may be predicted that such stability would be at least somewhat lower than for the personality measures. Another question has to do with the predictive power of the skill and personality domains. We have found that personality dimensions predicted entrepreneurial status more strongly than did skills. Research examining entrepreneurial *success* (revenue, number of companies started, longevity) would be valuable and would allow a similar evaluation of the prediction that success is more associated with skills than personality. It will also be useful to identify the individual dimensions that have the most predictive power. In a previous investigation, we found that Independence, Non-Conformity, Risk Acceptance, and Idea Generation were dimensions most associated with entrepreneurial status. Which dimensions will prove most important in predicting success? One interesting possibility is that Interpersonal Sensitivity might be a potent predictor of entrepreneurial success despite—or perhaps because—it is the one dimension of the EMP on which entrepreneurs fall short of managers. Consistent with this possibility, there is
some evidence that measures of emotional intelligence are associated with some measures of entrepreneurial success (Zampetakis, Beldekos, & Moustakis, 2008; Ametoglu et al., 2011).

A second avenue for future research is to examine entrepreneurial mindset with different types of entrepreneurs. For example, would we see different patterns of scores for different kinds of entrepreneurs (e.g., high- versus-low growth entrepreneurs, tech- versus non-tech entrepreneurs, entrepreneurs by choice vs. necessity)? Would different EMP dimensions be important for predicting success in these different entrepreneurial environments? In addition, it will be informative to examine the relations between EMP dimensions and indicators of job success for managers. Are there some aspects of an entrepreneurial mindset that are useful even within corporate settings? It may well prove to be that corporate culture (supportive of entrepreneurial activities or not) will be an important moderator of such associations.

Finally, future research should explore the possibility that entrepreneurial mindset can be altered by deliberate efforts to do so. Interventions to improve one’s entrepreneurial skills, if demonstrably effective, would have considerable value. The most important question, of course, is whether or not it is in fact possible to increase aspects of entrepreneurial mindset through deliberate interventions. If it proves to be, then related questions would then revolve around which aspects are most amenable to such efforts. Our expectation is that skills dimensions are more susceptible to such efforts, but this remains to be demonstrated empirically. Another cluster of questions would then revolve around the intervention itself. What are the features of interventions that are the most effective? What settings are the most conducive to successful interventions, and how long should they last? A final related issue is whether, in the absence of increasing entrepreneurial mindset in individuals, it might be possible to improve the success of
entrepreneurial teams by ensuring that the team contains members who possess the full range of important EMP dimensions.

The EMP, therefore, has multiple practical applications—in leadership development, organization development, and career planning—and also serves as a valuable research tool. Thus, the EMP is appropriate for use by scientists, practitioners, and of course scientist-practitioners. We believe that the ongoing use of the EMP in research will inform its practical applications, and that ongoing experience in applying the EMP within organizations and university settings will likewise inform future research. Through this continuous and iterative process, it is our hope that the EMP will allow us not only to better understand entrepreneurs and intrapreneurs, but also to transform entrepreneurial capacity into successful ventures in both for-profit and not-for-profit organizations. We believe that the EMP is a promising platform for supporting innovation, exploration and growth in the 21st century.
References


Table 1A. The 14 scales measured by the first version of the *Entrepreneurial Mindset Profile (EMP)*.

<table>
<thead>
<tr>
<th>Personality Scales</th>
<th>Skill Scales</th>
</tr>
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<tbody>
<tr>
<td>Self-Confidence</td>
<td>Persistence</td>
</tr>
<tr>
<td>Optimism</td>
<td>Preference for Low Structure</td>
</tr>
<tr>
<td>Openness/Relishing Experimentation</td>
<td>Future Focus</td>
</tr>
<tr>
<td>Proactivity</td>
<td>Ideational Fluency</td>
</tr>
<tr>
<td>Nonconformity</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Passion</td>
<td>Originality</td>
</tr>
<tr>
<td>Need for Achievement</td>
<td>Elaboration</td>
</tr>
</tbody>
</table>
Table 1B. The 14 scales measured by the second (and final) version of the *Entrepreneurial Mindset Profile (EMP)*.

**Personality Scales**

**Independence:** The desire to work with a high degree of independence (e.g., *I'm uncomfortable when expected to follow others' rules.*)

**Preference for Limited Structure:** A preference for tasks and situations with little formal structure (e.g., *I find it boring to work on clearly structured tasks.*)

**Nonconformity:** A preference for acting in unique ways; an interest in being perceived as unique (e.g., *I like to stand out from the crowd.*)

**Risk Acceptance:** A willingness to pursue an idea or a desired goal even when the probability of succeeding is low (e.g., *I'm willing to take a certain amount of risk to achieve real success.*)

**Action Orientation:** A tendency to show initiative, make decisions quickly, and feel impatient for results (e.g., *I tend to make decisions quickly.*)

**Passion:** A tendency to experience one's work as exciting and enjoyable rather than tedious and draining (e.g., *I'm passionate about the work that I do.*)

**Need to Achieve:** The desire to achieve at a high level (e.g., *I want to be the best at what I do.*)

**Skill Scales**

**Future Focus:** The ability to think beyond the immediate situation and plan for the future (e.g., *I'm focused on the long term.*)

**Idea Generation:** The ability to generate multiple and novel ideas, and to find multiple approaches for achieving goals (e.g., *Sometimes the ideas just bubble out of me.*)

**Execution:** The ability to turn ideas into actionable plans; the ability to implement ideas well (e.g., *I have a reputation for being able to take an idea and make it work.*)

**Self-Confidence:** A general belief in one's ability to leverage skills and talents to achieve important goals (e.g., *I am a self-confident person.*)

**Optimism:** The ability to maintain a generally positive attitude about various aspects of one's life and the world (e.g., *Even when things aren't going well, I look on the bright side.*)

**Persistence:** The ability to bounce back quickly from disappointment, and to remain persistent in the face of setbacks (e.g., *I do not give up easily.*)

**Interpersonal Sensitivity:** A high level of sensitivity to and concern for the well-being of those with whom one works (e.g., *I'm sensitive to others' feelings.*)
Table 2. Comparison of Entrepreneurs and Corporate Managers on the 14 EMP Scales

<table>
<thead>
<tr>
<th></th>
<th>Entrepreneurs (N = 389)</th>
<th>Managers (N = 397)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personality Scales</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Independence</td>
<td>2.79</td>
<td>2.24*</td>
</tr>
<tr>
<td>Limited Structure</td>
<td>3.43</td>
<td>2.87*</td>
</tr>
<tr>
<td>Nonconformity</td>
<td>3.87</td>
<td>3.20*</td>
</tr>
<tr>
<td>Risk Acceptance</td>
<td>4.18</td>
<td>3.55*</td>
</tr>
<tr>
<td>Action Orientation</td>
<td>4.02</td>
<td>3.70*</td>
</tr>
<tr>
<td>Passion</td>
<td>4.32</td>
<td>4.01*</td>
</tr>
<tr>
<td>Need to Achieve</td>
<td>4.34</td>
<td>4.22*</td>
</tr>
<tr>
<td><strong>Skill Scales</strong></td>
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<td></td>
</tr>
<tr>
<td>Future Focus</td>
<td>3.41</td>
<td>3.25*</td>
</tr>
<tr>
<td>Idea Generation</td>
<td>4.31</td>
<td>3.60*</td>
</tr>
<tr>
<td>Execution</td>
<td>4.08</td>
<td>3.84*</td>
</tr>
<tr>
<td>Self-Confidence</td>
<td>4.13</td>
<td>3.86*</td>
</tr>
<tr>
<td>Optimism</td>
<td>4.28</td>
<td>3.93*</td>
</tr>
<tr>
<td>Persistence</td>
<td>4.50</td>
<td>4.25*</td>
</tr>
<tr>
<td>Interpersonal Sensitivity</td>
<td>3.55</td>
<td>3.84*</td>
</tr>
</tbody>
</table>

* p < .003
Appendix A. Sample feedback pages