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## Research report

## Manic tendencies are not related to being an entrepreneur, intending to become an entrepreneur, or succeeding as an entrepreneur

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## ABSTRACT

**Background:** Popular literature suggests a relationship between entrepreneurship and manic tendencies, yet little scientific research has evaluated whether manic tendencies foster entrance into entrepreneurial roles, intent to become an entrepreneur, or success as an entrepreneur.

**Methods:** In study 1, 225 undergraduates and business school students/affiliates took an online survey to assess engagement and intent as entrepreneurs, as well as manic tendencies, including family diagnoses as reported on the Family Index of Risk for Mania, subsyndromal manic tendencies as assessed with the Hypomanic Personality Scale, and self-reported diagnoses. In study 2, the sample of entrepreneurs identified in study 1 was enriched by recruiting a larger group of established entrepreneurs from the community. Entrepreneurs ( $n=210$ ) completed items concerning their success in entrepreneurship, and we examined whether the three measures of manic tendencies were related to success.

**Results:** There was no evidence that those vulnerable to mania, regardless of definition, were more likely to be entrepreneurs, to intend to become entrepreneurs, or to succeed as entrepreneurs.

**Limitations:** The studies were limited by self-report measures and relatively small samples.

**Conclusions:** More nuanced models may explain the frequent clinical observations of manic traits among entrepreneurs.

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## 1. Introduction

Entrepreneurship drives job creation and economic growth. In 2007, 8 million of the 12 million new jobs were created by firms that were one to five years old (Stangler and Litan, 2009). Young companies, and the entrepreneurs that create them, drive the job creation, and the economic recoveries and growth that societies depend upon for prosperity. Understanding the human factors that promote successful entrepreneurship has become an increasingly valued focus of scientific research.

Several authors have suggested that manic traits might be tied to entrepreneurship, drawing on case studies of business leaders such as Andrew Carnegie or Ted Turner for illustration (Gartner, 2005; Ghaemi, 2011; Whybrow, 2006). Several empirical findings support the idea that manic propensities may offer advantages in entrepreneurship. To begin, many entrepreneurs achieve high levels of accomplishment, and studies over the last 100 years

suggest that relatives of bipolar probands also often achieve high levels of accomplishment (Coryell et al., 1989; Johnson, 2005).

Indeed, some of the personality traits related to successful entrepreneurship seem also to be elevated among those prone to mania. A growing empirical literature suggests that tendencies to become an entrepreneur and entrepreneurial success are related to ambition, confidence, perseverance, and positive affectivity (Baron et al., 2011; Baum and Locke, 2004; Rauch and Frese, 2007b). In parallel, research suggests that those at risk, as well as those diagnosed with bipolar disorder, show high levels of ambition (Johnson et al., 2012), confidence (Mansell and Lam, 2006), perseverance (Harmon-Jones et al., 2008) and positive affectivity (Gruber, 2011), even during well periods.

Beyond parallels in these personality correlates of entrepreneurship and bipolar disorder, entrepreneurship is often based on developing technologies and innovations that depend on creativity (Runco, 2004). Several studies suggest an over-representation of people with bipolar spectrum and manic temperament among samples of highly creative musicians, artists, and authors (Akiskal and Akiskal, 1994; Andreasen, 1987; Jamison, 1993; Ludwig, 1992). Several large-scale epidemiological studies have found that persons with bipolar disorder and their unaffected family members are more likely than others to work in artistic occupations

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(Kyaga et al., 2011, 2013; Tremblay, 2010). Elevated creativity is more often documented in samples with milder vulnerability to mania, such as unaffected family members or those with subsyndromal manic traits, as opposed to those with bipolar I diagnoses (Akiskal and Akiskal, 1994; Richards et al., 1988). Given this profile, we consider three types of mania-related characteristics in the current study: diagnoses of bipolar disorder, subsyndromal manic traits, and family history of bipolar disorder.

Taken together, several lines of work indicate bipolar traits which could provide advantages in entrepreneurship. Although little quantitative research has examined this question, researchers examined whether self-report measures of mood-related temperament among outpatients differed by occupation. The 35 managers and executives had higher rates (43%) of stably manic traits than did the other groups (Akiskal et al., 2005). This study was limited by the focus on those already seeking treatment (who may be more severely affected by symptoms than those in a community sample) and did not explicitly recruit entrepreneurs. Hence there is a need to examine mania-related characteristics in a non-patient sample and to more directly examine how these relate to various facets of entrepreneurship.

We hypothesized that mania-related characteristics, including diagnoses of bipolar disorder, subsyndromal manic symptoms, and family history of bipolar and related diagnoses, would facilitate entrepreneurship. In study one, we examined whether mania-related traits related to being an entrepreneur or intending to become an entrepreneur. We assessed a general sample of undergraduates, supplemented with business school trainees and staff, as a population that is at a critical juncture in choosing career goals. In study 2, we examined whether mania-related traits were correlated with success as an entrepreneur. We specifically hypothesized that less severe manic traits, such as family history or subsyndromal symptoms would be more likely to relate to these positive entrepreneurship outcomes than would bipolar diagnoses.

## 2. Study 1 methods

Procedures were approved by the university ethics boards. Participants completed written informed consent procedures after verifying that they were at least 18 years old.

### 2.1. Participants

Participants were recruited through the research participation pools of a large public university. Potential participants viewed a website listing multiple studies, with this particular study described as an online survey of entrepreneurship and personality. All data was gathered anonymously, and surveys took approximately one hour to complete (and included multiple measures not discussed here). The survey was distributed through two participation pools: one for students, faculty, and staff of an MBA program, in which participants were paid \$15 for completing the survey, and a second for undergraduate students who received partial course credit in psychology classes (participants were offered alternative assignments to this research). After excluding 8 psychology and 6 MBA participants for failing catch items (e.g., "Please select two as your answer"), 76 MBA pool participants and 149 psychology students participated.

### 2.2. Measures

Participants completed online, self-report measures regarding entrepreneurship and three mania-relevant characteristics: subsyndromal manic tendencies, bipolar diagnosis, and family vulnerability to mania.

#### 2.2.1. Entrepreneurial Scale

Participants were asked, "Have you ever been self-employed, a business founder, or a business co-founder (including non-profit businesses)?" (Zhang et al., 2009). Those who had not yet become an entrepreneur were asked, "Do you have the intention to become self-employed, a business founder, or a business co-founder (including non-profit businesses)?" These two items were used to categorize participants into those who were entrepreneurs ( $n=32$ ), those who intended to become entrepreneurs ( $n=101$ ) and controls who were neither entrepreneurs nor intending to become entrepreneurs ( $n=92$ ). Participants who endorsed intent were asked four further questions to assess the strength of intent.

- How much do you intend to participate in founding a firm in the foreseeable future?
- How much do you intend to become self-employed in the future?
- If your research results or innovations have business potential, how much do you intend to participate in founding a company to commercialize them (Obschonka et al., 2010)?
- Have you sought information about the ways and means of founding a firm with the object of commercializing your innovations or research (Obschonka et al., 2010)?

Factor analysis, using oblimin rotation to identify independent (orthogonal) factor scores, confirmed that these four items loaded on a single intent factor,  $\alpha=.75$ . Factor scores were set to a mean of 0 and an  $SD$  of 1.

#### 2.2.2. Hypomanic Personality Scale (HPS; Eckblad and Chapman, 1986)

The HPS was developed as an index of risk for bipolar disorder. The 48 item scale covers subsyndromal symptoms of mania ("Sometimes ideas and insights come to me so fast that I cannot express them all"), as well as related traits such as positive affectivity. In the original validation sample, the HPS attained adequate internal consistency,  $\alpha=.87$ , 15-week test-retest reliability of .81, and differentiated those with bipolar spectrum diagnoses (78% of those with high scores as compared to 0% of those with low scores). Predictive validity for onset of bipolar diagnoses was further established in a 10-year follow-up study (Kwapil et al., 2000) and the scale has been shown to relate to genetic polymorphisms implicated in bipolar diagnoses (Johnson et al., in press). Internal consistency in the current study was good,  $\alpha=.92$ , ( $M= 25.58$ ,  $SD=6.19$ ).

#### 2.2.3. Family Index of Risk for Mania (FIRM; Algorta et al., 2013)

The FIRM was developed as a brief index of family history of bipolar disorder. Participants were asked if their grandparents, parents, aunts/uncles, siblings, or children had experienced suicide, depression, mania, hospitalization, or substance use. A total score was found to discriminate those with and without family history of bipolar diagnoses, and to perform better than specific item subsets or related rating scales (Algorta et al., 2013).<sup>1</sup> In the current sample, the mean FIRM score was 1.63 ( $SD=2.50$ ).

<sup>1</sup> Separate, parallel analyses were conducted to examine whether specific endorsement of a family history of bipolar disorder was related to entrepreneurship. Findings were entirely parallel with those for the FIRM score, in that family history of bipolar disorder did not differ between those who were entrepreneurs, who intended to become entrepreneurs and controls, and family history was also unrelated to factor scores for intent to become an entrepreneur or to factor scores for success as an entrepreneur.

### 2.2.4. Diagnoses of mania

Participants indicated if they had received a diagnosis of bipolar disorder. Only 4 (1.7%) of the 225 participants reported a diagnosis of bipolar disorder. Although the low endorsement rate precluded statistical examination of this variable, there was no evidence that bipolar diagnoses were higher in those who were entrepreneurs ( $n=1$ ) or who intended to become entrepreneurs ( $n=2$ ) compared to controls ( $n=1$ ).

### 2.3. Analysis plan

To examine whether the entrepreneurs, those who intended to become an entrepreneur, and the control participants differed on manic vulnerability, we conducted two separate, parallel analyses of variance (ANOVAs) to examine the dependent variables of the HPS and the FIRM. To assess whether these two indices of manic vulnerability related to the intentionality factor score (within those who had endorsed intent to become entrepreneurs but were not entrepreneurs), we conducted correlations.

## 3. Results

Because findings were comparable across the two participant pools, analyses report on the two samples as combined. In the combined sample (38.7% male), 73.6% reported ages between 18 and 21, 1.7% between ages 22 and 30, and < 1% over the age of 30. Ethnicity was endorsed as Asian by 27.5%, Caucasian by 55.3%, Middle Eastern by 3.9%, and biracial or other by 13.1%; across ethnicities, 9.6% described themselves as Hispanic/Latino. Skew and kurtosis estimates indicated that the HPS and FIRM distributions approximated normality.

HPS scores (mania risk) differed by entrepreneurship status,  $F(2, 222)=21.90, p<.0005$ . Contrary to hypotheses, HPS scores were higher in the controls,  $M=28.33$  compared to the entrepreneurs,  $M=21.31$  or those who intended to become entrepreneurs,  $M=24.42$ . FIRM scores (family risk) did not differ by entrepreneurship status,  $F(2, 218)=2.08, p=.13$ .

Contrary to hypotheses, HPS scores were related to significantly lower intention factor scores (within the intent group), Pearson  $r(61)=-.28, p=.03$ . FIRM scores were not significantly related to intention factor scores,  $r(61)=-.10, p=.44$ .

## 4. Discussion of study 1

Findings of study one did not support the idea that subsyndromal manic traits or family risk for mania related to being an entrepreneur or intending to become one. Although too few people endorsed bipolar diagnoses to provide statistical power, base rates of diagnoses in the entrepreneur or intent to become an entrepreneur samples were not higher than one would have expected in the general population. Subsyndromal manic tendencies were related to significantly less intent to become an entrepreneur. Although findings of this study did not suggest that manic vulnerability was tied to being an entrepreneur, it remains possible that manic traits could enhance success among those who do become entrepreneurs.

### 4.1. Study 2

The goal of study 2 was to examine whether manic traits relate to entrepreneurial success. To add to the entrepreneurs identified in study 1, we conducted outreach to the entrepreneurship community to identify participants who were already engaged as business founders and co-founders. Entrepreneurs answered items to quantify their successes as entrepreneurs. To enrich ability to

examine the effects of manic vulnerability, outreach was also targeted to those who might have mental health concerns, by emailing study information to clients of a counseling practice specialized in entrepreneurs with mood problems, and by giving talks in the community concerning mental health and entrepreneurship.

## 5. Methods

Procedures were approved by the university ethics board. All data were gathered anonymously, and all participants completed written informed consent.

### 5.1. Participants

Beyond the 32 entrepreneurs described above, an additional group of entrepreneurs was recruited through advertisements posted on entrepreneurship websites, journals, conferences, organizations, meet-up groups and viral outreach marketing. Potential participants completed a 10–15 min online anonymous survey on personality and entrepreneurship. Participants were included in this survey if they identified themselves as a business founder or co-founder. After excluding 12 participants from the entrepreneur community who failed catch items, 210 entrepreneurs were included in analyses.

### 5.2. Measures

Participants completed the measures described in study 1, as well as additional items relevant to entrepreneurial success. Consistent with the outreach concerning mental health-related questions, 22 persons endorsed bipolar diagnoses. However, another 22 persons did not disclose their bipolar diagnostic status. The mean HPS score was 22.95 ( $SD=6.53$ ) and the mean FIRM score was 13.00 ( $SD=2.95$ ). The HPS and the FIRM scores were approximately normally distributed.

#### 5.2.1. Entrepreneurial success

Participants were asked standard items relevant to success as entrepreneurs (Baum and Locke, 2004; Brandstatter, 2011; Obschonka et al, 2010; Rauch and Frese, 2007a; Zhao et al., 2010), as well as two items developed in consultation with professionals from the entrepreneurship community. To address outliers, extreme scores were reduced to the next highest observation for number of patents obtained, and number of businesses founded or co-founded.

Factor analysis using maximum likelihood analysis and oblimin rotation was conducted to identify subscales. Four factors that surpassed the threshold of Eigenvalue's  $> 1$  and Horn's Parallel Analysis were identified, explaining 57% of the variance. As shown in Table 1, factors consisted of number of businesses, patents and licenses, percent growth or loss (of sales, staff, customers, and valuation) in 3 years, and personal earnings. All factor scores were defined using regression weights, with a mean set to 0 ( $SD=1$ ). Most factors were fairly coherent, although one item designed to assess success appeared mostly to relate to income and so loaded on factor 4 (number of companies that participants did not found in which they owned at least a 1% share). The four success factor scores each had adequate internal consistency, and they were moderately correlated,  $r$ 's=.19–.39, with the exception of personal earnings with number of businesses,  $r=.46$ , and with patents or licenses,  $r=.49$  (all  $p$ 's  $< .001$ ).

**Table 1**  
Entrepreneurship success factor scores (pattern matrix) (N=210).

|  | Factor loading |     |     |     | Mean  | SD    |
|--|----------------|-----|-----|-----|-------|-------|
|  | 1              | 2   | 3   | 4   |       |       |
| Number of businesses (alpha=.84)   |                |     |     |     |       |       |
| In how many companies have you held a 5% or greater equity interest and either C-level or SVP-level responsibilities?  | 1.00           |     |     |     | 1.72  | 1.51  |
| How many businesses or self-employment practices have you founded or co-founded?   | .71            |     |     |     | 2.36  | 1.45  |
| Factor 2: Patents and licenses (alpha=.80)   |                |     |     |     |       |       |
| How many patents have you or your businesses ever been awarded?  |                | .94 |     |     | .54   | 1.26  |
| How many patent applications have you or your businesses ever submitted?   |                | .89 |     |     | .91   | 1.61  |
| How many licenses or licensing rights agreements have you or your businesses ever owned?   |                | .39 |     |     | .68   | 1.35  |
| How many products and/or technologies have you or your businesses ever licensed to others?   |                | .38 |     |     | .74   | 1.38  |
| Factor 3: Growth or loss (alpha=.86)   |                |     |     |     |       |       |
| By what percent has your company's valuation or market capitalization changed in the last three years?   |                |     | .90 |     | 29.38 | 45.98 |
| By what percent has your company's total workforce changed in the last three years?  |                |     | .81 |     | 26.45 | 46.82 |
| By what percent has your company's customer, user, subscriber or member base changed in the last three years?  |                |     | .75 |     | 41.32 | 47.76 |
| By what percent: has your company's total sales revenue changed in the last three years?   |                |     | .61 |     | 30.05 | 42.84 |
| Factor 4: Personal earnings (alpha=.70)  |                |     |     |     |       |       |
| Over the last three years, what was your average total compensation from self-employment, businesses that you co-founded? (Answered on a 7-point likert scale ranging from < 75,000 to > 2.5 million). |                |     |     | .92 | 2.08  | 1.52  |
| How much total profit or capital gains have you realized from exiting a business(es) that you co-founded?(Answered on a 7-point likert scale ranging from < \$125k to > \$10 million.)                 |                |     |     | .59 | 2.09  | 1.83  |
| In how many companies that you did not co-found do you own equity positions that are greater than 1 percent?   |                |     |     | .48 | .66   | 1.52  |

Factor loadings < .30 are omitted.

**Table 2**  
Correlations of the HPS and the FIRM with entrepreneurial success factor scores.

| Factor score         | HPS (n=210)       | p   | FIRM (n=201) | p   |
|----------------------|-------------------|-----|--------------|-----|
| Number of businesses | -.10              | .14 | .001         | .99 |
| Patents or licenses  | -.07              | .30 | -.06         | .36 |
| Growth               | -.18 <sup>b</sup> | .01 | .07          | .32 |
| Personal earnings    | .10               | .14 | .00          | .99 |

Note: FIRM=Family Index of Risk for Mania; HPS=Hypomanic Personality Scale.

<sup>b</sup> p < .01.

### 5.3. Analysis plan

Four *t*-tests were conducted to examine whether those who self-reported bipolar diagnoses had higher entrepreneurial success factor scores than those who did not. Eight correlations were conducted to examine whether HPS or FIRM scores related to entrepreneurial success factor scores.

## 6. Results

Preliminary analyses suggested that results were comparable regardless of the source of recruitment, and so findings are reported collapsed across recruitment source. For the combined sample (70.5% male), 22.7% were age 18–30, 25.0% were in their 30's, and 24.5% were in their 40's. Ten % described their ethnicity as Asian, .5% as African American, 72.9% as Caucasian, 3.8% as Middle Eastern, and 12.8% as other. Across ethnicities, 9.5% endorsed being Hispanic or Latino. 3.6% reported a high school equivalent, 12.2% reported some college, 33.2% reported a bachelor's degree, 15.8% had completed a graduate business degree, and 35.2% had completed other graduate training.

Participants with and without self-reported bipolar diagnoses did not differ in mean factor scores for the number of businesses,  $t(186) = -.87$ ,  $p = .39$ , the number of patents or licenses,  $t(186) = -.79$ ,  $p = .43$ , growth,  $t(186) = .31$ ,  $p = .75$ , or personal earnings,  $t(186) = -.83$ ,  $p = .41$ .

As shown in Table 2, FIRM (family risk) scores were unrelated to entrepreneurial success. The HPS was unrelated to most of the

success indices, with the exception that higher manic vulnerability (HPS) was related to significantly more corporate loss (of sales, staff, customers, and valuation).

## 7. Discussion study 2

Findings of study 2 did not indicate that those with mania-related characteristics were advantaged in their performance as entrepreneurs. That is, bipolar diagnosis and family risk for bipolar disorder (FIRM) were both unrelated to success indices. Tendencies to experience subsyndromal manic symptoms were not significantly related to success/failure indices, with the exception that those with higher manic vulnerability scores were more likely to report more corporate losses within the past three years.

## 8. Discussion

This paper provides one of the first quantitative studies of manic traits and entry into entrepreneurship, and to the best of our knowledge, provides the first examination of whether these characteristics promote success as an entrepreneur. Even though several popular books and articles have focused on entrepreneurship and mania, little data has been available to consider the relationship between entrepreneurship and manic traits. The study is unique in considering three facets of manic traits: self-identified diagnosis, family risk for bipolar disorder and subsyndromal lifetime symptoms of mania, and is further strengthened by conjoint consideration of whether these traits are related to being an entrepreneur, intending to become an entrepreneur, and several measures of success or failure. Findings of study 1 provided no support for hypotheses that family risk of bipolar diagnoses or manic subsyndromal traits were positively related to being an entrepreneur or intent to become an entrepreneur. Rather, subsyndromal manic traits were related to less intent to become an entrepreneur. Findings of study 2 also provided no evidence that manic traits are an advantage among entrepreneurs. Indeed, bipolar diagnosis and family risk were unrelated to any index of entrepreneurial success. Subsyndromal symptoms, as measured with the HPS, were related to greater corporate losses over the past

three years, suggesting that at least one form of manic traits might be a liability rather than an asset in a business environment.

Current findings do not reconcile with an emergent popular emphasis on the hypomanic entrepreneur, however limitations must be considered. These include the small sample of those with diagnoses of bipolar disorder, which limited our ability to consider variation within this subsample. A second concern was our reliance on self-report measures of manic vulnerability and entrepreneurship. It is noteworthy that 22 participants declined to disclose bipolar diagnosis, reflecting the difficulty of relying on self-diagnosis. A third concern relates to the FIRM, as a relatively new index that has been cross-validated across few samples.

Notwithstanding limitations, how do these findings fit with the case studies of extraordinary success among entrepreneurs with manic traits? A more nuanced model may be needed. One possibility is that manic traits are not consistently related to entrepreneurship, but rather that moderators are key. That is, benefits of manic traits for entrepreneurship may be reversed by comorbid psychiatric conditions. Most people with bipolar disorder have one or more co-occurring mental health conditions (Kessler et al., 2005). Liabilities associated with some of these conditions may undermine the success of bipolar-spectrum entrepreneurs. Another source of moderation might be contextual factors such as economic cycles, access to capital, abundance of opportunity, and policy-driven incentives for risk taking. Similarly, manic traits may confer advantage at different stages of the entrepreneurial journey, such as during the business launch, rapid growth periods, and periods of intense and creative intellectual property development. Without further data, we cannot differentiate whether manic tendencies are simply unrelated to entrepreneurship, or whether manic traits could offer a competitive advantage for specific individuals at specific entrepreneurial moments and situations.

In sum, across two studies, we failed to find evidence that mania-related traits enhance becoming an entrepreneur, intending to become an entrepreneur, or succeeding as an entrepreneur. Nonetheless, given the growing body of case reports, it is important to consider more dynamic models of whether bipolar traits provide advantages for those who have fewer comorbid conditions, for particular stages of the entrepreneurial process, or in specific macroeconomic and local environments.

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#### Conflict of interest

None.

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