Extreme Goal Setting and Vulnerability to Mania Among Undiagnosed Young Adults

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Abstract

During euthymia people with bipolar disorder and their unaffected family members accomplish more than the general population. People with bipolar disorder, or those who are at risk for it, also set higher goals in laboratory tasks than other people. The work reported here examines whether persons vulnerable to mania set elevated goals in their lives. In two studies, a measure of lifetime vulnerability to mania was related to traits bearing on incentive sensitivity, and also to endorsement of high ambitions for fame, wealth, and political influence (assessed by a new measure). Relations were weaker to ambitions for other kinds of extreme goals. The effects were independent of current symptoms of mania and depression and lifetime depression. There was also evidence that incentive sensitivity and elevated aspirations made independent contributions to variance in the measure of manic risk. Discussion focuses on the implications of high goal setting for understanding goal dysregulation and mania.

Keywords

Ambition; Mania; Cognition; High risk

Bipolar I disorder, defined by the occurrence of a single lifetime episode of mania, is one of the most severe of psychiatric illnesses. It accounts for nearly half the inpatient mental health care costs in the United States (Kent, Fogartee, & Yellowless, 1995). The rate of suicide in bipolar I disorder is 12–15 times that of the general population (Angst, Stausen, Clayton, & Angst, 2002). Given these human costs, a better understanding of the dynamics of this disorder is clearly needed.

There is no question that mania is deeply rooted in biology. Heritability estimates for an initial manic episode fall between 80 and 85% (McGuffin et al., 2003; Vehmanen, Kaprio, & Loennqvist, 1995). On the other hand, biological variables do not account well for variations in the course of the disorder (cf. Keller et al., 1992). This has led to interest in psychosocial variables that may help predict manic symptoms (for a review see Johnson & Meyer, 2004).

In this article we consider one class of psychological variable that seems relevant to mania: ambitious goal-setting. Several sorts of evidence lead us to examine this variable. For one, bipolar disorder has been linked for many years to above-average attainment. In 1913, Stern noted that patients with affective psychosis (or their fathers) were more likely to be professionals than were patients with schizophrenia (or their fathers). In nine epidemiological

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studies from the United States, Sweden, Iceland, Finland and India, mania related to social class (see Johnson, 2005 for a review), although there have been two failures to replicate this (Kessler, Rubinow, Holmes, Abelson & Zhao, 1997; Lewinsohn, Seeley, Buckley, & Klein, 2002).

This pattern, which is in sharp contrast to that seen with most psychiatric disorders (cf. Weissman & Myers, 1978), is surprising, because many factors work against achievement in people with mania. People with mania tend to remain unemployed for long periods after episodes (Harrow, Goldberg, Grossman, & Meltzer, 1990). Early onset of the illness may interfere with on-schedule completion of college (Lewinsohn, Klein, & Seeley, 1995). Nonetheless, many people with bipolar symptoms (and particularly those with bipolar II disorder) have periods of high accomplishment, and above-average lifetime occupational and educational attainment (Coryell et al., 1989; Woodruff, Robins, Winokur, & Reich, 1971). Such findings are particularly pronounced in studies of creative and famous individuals, in whom bipolar disorder is over-represented (Andreasen, 1987; Jamison, 1993). People at risk for mania have also been found to have high educational and occupational attainment (Kwapil et al., 2000). Similar patterns of attainment have also been seen among unaffected family members of people with bipolar disorder (Coryell et al., 1989; Richards, Kinney, Lunde, & Benet, 1988).

Because this pattern emerges even in careful epidemiological studies with standardized diagnostic interviews (Weissman & Myers, 1978), it does not seem to be an artifact of bias in diagnosis. Nor does it seem to derive from any link between bipolar disorder and intelligence (cf. Martinez-Aran et al., 2000), even in studies of unaffected family members (Decina et al., 1983).

One view of this pattern is that bipolar disorder relates to traits that promote achievement, such as setting high goals and striving for success (Johnson, 2005). Such traits are robust predictors of accomplishment in nondisturbed populations (Locke & Latham, 2002), and anecdotal evidence also links them to mania. Early clinical observations noted elevated drive, ambition, and achievement striving in people with bipolar disorder (Akiskal, Hirschfeld, & Yerevanian, 1983; Peven & Shulman, 1983) and their family members (cf. Cohen, Baker, Cohen, Fromm-Reichmann, & Weigert, 1959). Empirical studies have also related bipolar disorder to intense pursuit of goals, even during euthymic periods. For example, in one early study, persons with remitted bipolar disorder reported valuing achievement more than healthy controls did (Spielberger, Parker, & Becker, 1963). Two other studies found that people with bipolar disorder in remission were differentially likely to endorse items reflecting perfectionism and the need to achieve (Scott, Stanton, Garland, & Ferrier, 2000; Lam, Wright, & Smith, 2004). This desire for success appears tied to vulnerability rather than current symptoms, as neither current manic symptoms nor positive affect correlate with achievement striving (Scott et al., 2000).

Ambitious goal-setting has also been seen among persons at risk for the development of bipolar disorder.[1] In two studies of students, vulnerability to mania correlated with expectations for long-term success in school and work (Eckblad & Chapman, 1986; Meyer & Krumm-Merabet, 2003). In another study, students had an initial success experience, and then were asked to choose the difficulty level of an upcoming task. Students with a vulnerability to manic symptoms chose a more difficult task than did those who were not vulnerable (Johnson, Ruggero, & Carver, 2005).

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[1] Throughout this article we use the term vulnerability in an actuarial rather than a mechanism sense—that is, to refer to high risk of future manic episodes. Our focus here is not in claiming a specific mechanism of vulnerability, but rather in identifying a group of persons who are demonstrably at high risk for mania (Eckblad & Chapman, 1986; Kwapil et al., 2000).

Summary and present research

In sum, bipolar disorder appears to be associated with periods of great accomplishment. People with bipolar disorder and those with vulnerability to the disorder appear to set high goals and focus on achievement. These effects do not appear to be accounted for by elevated mood or other symptoms at the time of assessment.

These findings have several limitations, however. First, most studies have not assessed goals directly, but rather patterns of accomplishment. Second, an important alternative has not been ruled out: Specifically, because episodes of mania are so damaging to social and occupational accomplishment, elevated goal striving may reflect an attempt to compensate for previous illness-related losses. Thus, there is a need to examine goals among persons who are simply at elevated risk for bipolar disorder, rather than already diagnosed with the disorder. Third, because depression is common among people vulnerable to hypomania, there is a need to control for depression vulnerability. Most studies have failed to control for depression vulnerability.

The work reported here was intended to address these limitations. We did so by examining life goals among students at risk for development of bipolar disorder, using a measure of goals developed for this purpose. We also reexamined the link between the vulnerability to mania and a personality measure of trait-like sensitivity to incentives, which has been related to mania history and manic vulnerability in previous studies (Meyer, Johnson, & Carver, 1999; Meyer, Johnson, & Winters, 2001). Including this measure allowed us to test whether any association of manic vulnerability with extreme goal setting simply reflects incentive responsiveness per se. Finally, we also tested whether any associations obtained with manic vulnerability were actually a product of current symptom levels, and whether high goals relate to lifetime depression.

Study 1

Method

Participants were students at the University of Miami. The two measures assessing lifetime experiences pertaining to mood disorders were administered in large group sessions in the first week of the semester, along with a measure of sensitivity to incentives and threats, and further measures not relevant to this report. Several additional scales were completed in partial fulfillment of a course requirement 3–6 weeks later in small groups (students completing the second session were not pre-selected in any way). Varying numbers of those who completed the later sessions had completed various measures earlier. How many persons contributed to tests of specific associations is noted later on. Participants who skipped a large number of items or provided suspicious responses (e.g., unrealistic age, geometric patterns on the answer sheets, or extreme and inconsistent responses) were excluded from analyses.

Measures relating to mood disorders—We assessed history pertaining to both mania and depression. We also measured current symptoms of both mania and depression. The latter were completed in the same session as the measures of high goals (the second session). This let us determine whether any association of the lifetime vulnerability factors with high goals depended on the current presence of symptoms.

<u>Hypomanic personality scale:</u> The Hypomanic Personality Scale (HPS; Eckblad & Chapman, 1986) was developed to identify people at risk for episodes of mania (bipolar spectrum disorders). The scale contains 48 true-false self-report items. Although the inclusion of the word "personality" in the scale title would imply that the scale captures chronic experiences, the wording of the items captures episodic shifts in emotions, behavior, and energy. Examples

include: "There have often been times when I had such an excess of energy that I felt little need to sleep at night," and "I often feel excited and happy for no apparent reason" (both keyed true). In previous research, more than 78% of undergraduates with high HPS scores (2 or more *SD*s above the mean) were found to meet diagnostic criteria for bipolar spectrum disorders (Eckblad & Chapman, 1986). Over a 13-year period, high scorers were found to have a 9-fold prevalence of hypo-manic episodes compared to low scorers (Kwapil et al., 2000). Eckblad and Chapman (1986) reported that the HPS correlates well with other screening instruments for mania (General Behavior Inventory: $r = .47$, $n = 768$) and is uncorrelated with the Crowne–Marlow Social Desirability Scale, $r = .05$, $n = 768$. The measure has high reliability (15-week test–retest reliability = .81; α= .87). In the sample of Study 1, internal consistency was high, α = .83. The mean score was 18.20 ($SD = 7.38$). In the sample of 142 who completed the second session, only 1 person met or exceeded the value of 35, the cut-off for elevated scores (2 *SD*s above the mean of the validation study; Eckblad & Chapman, 1986).

Lifetime depression symptoms: The majority of people with an episode of depression will experience a recurrence (APA, 2002). Given this, lifetime depression is often used as an index of vulnerability to depression. Lifetime depressive symptoms were assessed by the Inventory to Diagnose Depression-Lifetime version (IDD-L, Zimmerman & Coryell, 1987). This 45-item scale indexes the number of DSM-IV symptoms of depression that a person experienced for at least 2 weeks during their worst lifetime period of depression, and assesses whether or not the symptoms required for a DSM-IV diagnosis are endorsed. The scale has high sensitivity and specificity for diagnoses made using structured research interviews, and strong correlations with other measures of depression (Zimmerman & Coryell, 1987). In this study, the internal consistency for symptoms endorsed on this scale was high, α = .93. The mean score was 12.57 on the symptom severity scale ($SD = 16.02$), and 36 students (25%) reported a history of major depression.

Current manic symptoms: Manic symptoms were assessed at the second session, using the Self-Rating Mania Index (SRMI, Altman, Hedeker, Peterson, & Davis, 1997). Items on this scale have been shown to load on a single component in factor analysis, and the scale achieves strong correlations with self-report and interview measures of mania (Altman, Hedeker, Peterson, & Davis, 2001). It has also shown a strong ability to discriminate patients with mania from those with schizophrenia or depression (Altman et al., 1997). Possible scores range from 5 to 25. In this sample, α was .76, and the mean score was 9.98 ($SD = 3.73$). Only 3 persons in this sample reported current clinically significant symptoms of hypomania on the SRMI (≥14).

Current depression symptoms: Current symptoms of depression were also assessed at the same time as goals, using the Short Form of the Beck Depression Inventory (BDI, Beck & Beck, 1972). The short-form BDI consists of 13 self-report items concerning affective, cognitive, and somatic symptoms of depression. The scale has adequate internal consistency, high correlations with other measures of depression, and high correlations with risk variables for depression (Gould, 1982; Knight, 1984; Scogin, Beutler, Corbishley, & Hamblin, 1988). In this sample, α was .85, and the mean score was 3.83 ($SD = 4.08$).

Measures relating to incentive sensitivity and goals—As noted above, we collected several measures that relate to pursuit of goals. One of them measures aspects of sensitivity to incentives. Another measures aspirations to high goals. The first of these was collected during the initial testing session, the other during the second session.

Incentive and threat sensitivity: During the initial session, trait sensitivity to incentives and threats was assessed by the BIS/BAS scales (Carver & White, 1994). Response options range

from "very false for me" (1) to "very true for me" (4). One scale (7 items) reflects threat sensitivity, or responsiveness of the behavioral inhibition system, or BIS (e.g., "Criticism or scolding hurts me quite a bit," "I feel worried when I think I have done poorly at something important"). Three scales reflect aspects of sensitivity or responsiveness of the behavioral activation system, or BAS. The scales are Fun seeking (4 items, e.g., "I crave excitement and new sensations"), Drive (4 items, e.g., "I go out of my way to get things I want"), and Reward responsiveness (5 items, e.g., "When I get something I want, I feel excited and energized"). Items of each scale are summed. Psychometric characteristics, including convergent and discriminative validity are reported elsewhere (Carver & White, 1994). In this sample, αs were .78 for Drive (M = 11.57, SD = 2.48), .58 for Reward responsiveness (M = 17.73, SD = 1.76), .66 for Fun seeking (M = 12.42, SD = 2.19), and .73 for BIS, or threat sensitivity (M = 20.75, SD = 3.71).

High goals: In planning Study 1, we created a list of 20 goals selected to be very ambitious— indeed, in some instances unrealistically or grandiosely ambitious. This item set was the first iteration of a measure that was refined in Study 2. We refer to this measure as the Willingly Approached Set of Statistically Unlikely Pursuits (WASSUP). In writing items, we tried to include aspirations that were economic, political, creative, and social. We included some that might be seen as reflecting intrinsically valuable goals (e.g., you will have an idea that will transform society, you will make a great medical breakthrough) along with others that were more focused on fame, material success, political influence, and celebrity (e.g., you will be famous, celebrities will want to be your friends, you will have a major role in a movie). Respondents were instructed to rate how likely each of the outcomes was to occur. Response options ranged from "no chance of occurring" (1) to "definitely WILL occur" (5).

An exploratory factor analysis was conducted to determine whether the items aggregated in a meaningful way and to reduce the item set to a more manageable number of variables. This analysis used an oblimin rotation to permit correlations among factors. Five factors emerged with eigenvalues greater than 1, accounting for 68% of the variance in responding. All but one item loaded above .4 on its primary factor; that item loaded .39. All but two items loaded below .3 on all secondary factors; those items loaded below .35.

The first factor, reflecting popular fame, was marked by 7 items with loadings ranging from .85 to .58, including "you will develop a TV show or a movie," "you will create a great work of art, music, or poetry," "you will have a major role in a movie," and "celebrities will want to be your friends." The second factor was closely focused on medical and educational pursuits, with two items, loading .86 and .80: "you will make a great medical breakthrough" and "you will have a doctoral degree (MD or PhD)." The third factor primarily concerned wealth, but also had overtones of a broader sort of fame. The five items loading on this factor (from .87 to .46) were "you will have a million dollars or more," "you will have 20 million dollars or more," "you will run a fortune 500 company," "you will be on a magazine list of the sexiest people alive," and "someone will write a book about your life." The fourth factor concerned political power, with three items loading .89, .80, and .39: "you will be president of your country," "you will be important in political circles," and "you will have an idea that will transform society." The fifth factor loaded only one item: "everyone you know will love you." These factors were not strongly inter-related (as factor scores). Popular fame correlated .40 with wealth and wealth correlated .31 with political influence, but all other associations fell below .26.

Scale scores were created by averaging the responses to items loading on that factor (thus placing the scale scores on the metric of the item responses). Internal reliabilities, Ms, and SDs are as follows: Popular fame M = 2.23, SD = .84, α = .89; medical M = 2.65, SD = .99,

α = .64; wealth *M* = 2.20, *SD* = .79, α = .83; political influence *M* = 1.95, *SD* = .73, α = .66; love of friends (1 item) *M* = 2.57, *SD* = 1.19.

Scholastic aptitude: Participants in the second session were asked to report their scores on the Scholastic Aptitude Test (SAT). This was taken as a rough index of intellectual capability (note that these are self-reports, with no external validation). The scores were available for 115 participants; the rest reported that they had never taken the SAT or did not remember their scores.

Results

We began by examining correlations among the scales relating to mood disorder. As would be expected, lifetime and current measures of depression correlated positively, *r* = .38, *P* < .001, and current mania and depression correlated negatively, *r* = −.30, *P* < .001. Consistent with the fact that 75% of people with manic episodes experience major depression (Karkowski & Kendler, 1997), the HPS and IDD-L correlated positively, *r* = .31, *P* < .001. Unexpectedly, vulnerability to hypomania and current hypomanic symptoms correlated only modestly, *r* = .17, *P* = .05.

We then related mood measures to the BIS/BAS scales. As noted earlier, the associations pertaining to lifetime mood histories come from a larger sample than those pertaining to current mood (Table 1). HPS related significantly to all incentive-sensitivity scales of the BIS/BAS, but not to threat sensitivity; current manic symptoms related only to Fun seeking. Lifetime depression, as measured by the IDD-L, related to greater Reward responsiveness and to greater threat sensitivity; current depression related to less Drive and greater threat sensitivity.

Correlations of the mood measures with the preliminary scales of the WASSUP are in Table 2. There was a strong association of HPS with popular fame, more modest associations with political influence and financial success, and only nonsignificant relations to expectations of medical and educational success and love from friends. In contrast, current manic symptoms related to only the expectation of medical success. Current depression related only to the political influence factor, and lifetime depression related (negatively) to the medical fame factor.

Our next question was how robust would be the associations of those variables with HPS scores, when controlling for the other mood-related measures. Partial correlations of the HPS with BIS/BAS and WASSUP scales, controlling for current symptoms of both mania and depression and controlling for depression vulnerability, are in Table 3. These partials are computed only among the subsample of 120 who completed all these measures. Also shown there are partial correlations of the IDD-L with BIS/BAS and WASSUP, controlling for both kinds of current mood symptoms and HPS scores. As can be seen, these results were very close to the bivariate correlations in Table 1 and Table 2. When controlled further for SAT scores (in the subsample for whom those scores were available), the relations of HPS with the other variables remained virtually identical to those shown in Table 3.

Finally, we explored whether the associations of HPS scores with elevated goals were redundant with relations between HPS and BIS/BAS scales. We did this by conducting multiple regression analyses, in which we predicted HPS scores as the criterion, using the BIS/BAS scales and a goal factor to which HPS had related (i.e., one at a time; the subsample for these analyses was 173). These analyses revealed that the WASSUP factors and the BIS/BAS scales accounted for largely independent variance in HPS scores. The BIS/BAS scales and the aspiration to popular fame jointly accounted for 39% of the variance in HPS scores, with significant contributions made by Drive (β = .17, *P* < .02), Fun seeking (β = .35, *P* < .001), and fame goals (β = .37, *P* < .02). The analysis with financial aspirations accounted overall for

29% of the variance in HPS scores, with significant contributions from Drive ($\beta = .19$, $P <.02$), Fun seeking ($\beta = .40$, $P <.001$), and financial goals ($\beta = .16$, $P <.02$). The analysis involving political aspirations accounted for 29% of the variance in HPS scores, with significant contributions made by Drive ($\beta = .22$, $P < .004$), Fun seeking ($\beta = .38$, $P < .001$), and political-influence goals ($\beta = .18$, $P < .01$). When all three of these WASSUP scales were entered with BIS/BAS scales in a single model, the R^2 was .38, and Drive, Fun Seeking, and aspiration to popular fame made significant independent contributions to prediction.[2]

Discussion

Study 1 found that a measure of lifetime vulnerability to hypomania related to all three aspects of trait reward sensitivity (replicating previous findings), and also to three types of high goals: popular fame, political influence, and financial success. It did not relate to other sorts of goals measured by this version of the WASSUP. These associations remained robust (except for political influence) when controlling for current symptoms of mania, lifetime depression, and current depression symptoms. The associations appear not to depend on intellectual capability, as reflected in self-reported SAT scores. Finally, we determined that the associations with goals are largely distinct from the associations between HPS and the measures of reward sensitivity.

One aspect of these findings was somewhat puzzling. Manic episodes are associated with elevated social activity. For this reason, we were struck by the lack of relations between the HPS and social goals. We were concerned that our item set had not included sufficiently ambitious interpersonal goals. In part to address this possibility, we conducted a second study, using a second iteration of the WASSUP. We wrote more items to capture interpersonal goals in the domain of close personal relationships and in the domain of family relationships. We also wrote items to reflect intrinsic goals of other sorts, involving both the broader social good and the processes of autonomy and self-actualization. In this iteration of the WASSUP we omitted the items about medical and advanced educational goals, and slightly rephrased several other items.

One further change was also made in Study 2. The instructions for the WASSUP in Study 1 had an unintended ambiguity. They did not explicitly reference the active setting of goals, but simply asked participants to report how likely the outcome was to occur, as an indirect reflection of an aspiration. In Study 2, we asked respondents explicitly to indicate how likely they were to actively set these as goals for themselves.

Study 2

Method

Participants were 888 undergraduates (321 males) at the University of Miami (the *N* for all analyses other than the factor analysis of the WASSUP was lower than this, because participants did not complete all of the measures; *N*s for specific sets of correlations are given later). All measures were administered in large group sessions in the first week of the semester (over two consecutive semesters), along with additional measures that are not relevant to this report.

Measures relating to mood disorders—As in Study 1, we assessed vulnerability to mania and depression, and also current symptoms of mania and depression. This permitted us to test again whether any association of the vulnerability factors with elevated goals depended on the current presence of symptoms.

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[2]We also tested for potential interactions between incentive sensitivity and high goals (based on the reasoning that hypomanic tendencies may reflect a confluence of these two qualities); none was found, however.

HPS and IDD-L: As in Study 1, all participants completed the HPS, assessing vulnerability to mania. α reliability was .86. The mean score was 19.24 (*SD* = 3.42). In this sample, 33 persons met or exceeded the value of 35, the cut-off for elevated scores. This permitted us to conduct a more stringent test of the relation between vulnerability and high goals.

As in Study 1, we also assessed lifetime depression, with the IDD-L. In this sample the α reliability was .94. The mean score was 11.38 (*SD* = 15.58). In this sample, 251 (29%) of the sample reported having experienced a major depressive episode during their lifetime.

Current manic and depressive symptoms: Current manic symptoms again were assessed with the SRMI. α reliability was .76 (*M* = 9.21, *SD* = 3.42). Current symptoms of depression were assessed with the BDI Short form. α reliability was .77 (*M* = 3.14, *SD* = 3.73).

Measures relating to goals or aspirations

Incentive and threat sensitivity: Trait sensitivity to incentives and threats was again assessed by the BIS/BAS scales (Carver & White, 1994), in a portion of the sample. α reliabilities for the scales in this sample were .77 for Drive (*M* = 12.02, *SD* = 2.44), .65 for Reward responsiveness (*M* = 17.34, *SD* = 1.99), .72 for Fun seeking (*M* = 12.47, *SD* = 2.25), and .76 for BIS, or threat sensitivity (*M* = 20.78, *SD* = 3.77).

High goals: For Study 2 we modified our list of highly ambitious goals, writing new items pertaining to personal relationships and to intrinsic goals. This version had 30 items. Instructions asked respondents to indicate how likely they were to set each of the outcomes named as a goal for themselves. Response options ranged from "no chance I will set this goal for myself" (1) to "definitely WILL set this goal for myself" (5).

We conducted an exploratory factor analysis among the 888 participants who completed this measure, to reduce the 30 items to a more manageable set of variables. As in Study 1 we used an oblimin rotation to permit correlations among factors. Seven factors had eigenvalues greater than 1, accounting for a total of 61% of the variance. All but 3 of the 30 items loaded above .50 on their primary factor, and the loadings of those three all exceeded .40. All but five items loaded below .3 on all secondary factors, and only one of the five loaded above .4 on a secondary factor.

The first factor consisted of 7 items relating to popular fame (e.g., "you will appear regularly on TV," "you will have a major role in a movie," "celebrities will want to be your friends," and "you will be famous"), with loadings from .88 to .40. The second factor loaded five items reflected idealized relationships with one's partner and family (e.g., "your relationship will be more romantic than Romeo and Juliet," "your partner relationship will be sheer bliss for years," and "your children will see you as the perfect parent"), with loadings ranging from .80 to .45. Factor 3 was made up of two items pertaining to having a positive impact on world well-being ("you will create world peace," and "you will stop world hunger"), both items loading .83. Factor 4 consisted of two items on political influence ("you will be important in political circles," and "you will be president of your country"), loading .81 and .70. The fifth factor loaded 5 items concerning relations with friends (e.g., "you will have 40 close friends," "you will have 100 friends," "everyone you know will love you"), with loadings from .82 to .55. Factor 6 loaded three items referencing financial success ("you will have a million dollars or more," "you will have 20 million dollars or more," and "you will run a Fortune 500 company"), loading .70 to .62, plus "you will have more than 50 lovers in your lifetime," Which loaded .53. The final factor was the least specific, with items on creativity ("you will create a great work of art, music, or poetry"), self-actualization ("you will self-actualize or reach Nirvana"), and personal fulfillment ("each day of your work will be fulfilling"), with loadings ranging from .55 to .44. The factor scores were not highly correlated. Goals concerning family

correlated .39 with goals concerning friends; goals for popular fame correlated .30 with financial success; goals concerning friends correlated .25 with those concerning financial success; all other correlations were below .25.

Scale scores were created by averaging the responses to items loading on that factor. Internal reliabilities,*M*s, and *SD*s are as follows: Popular fame*M*= 2.02, *SD* = .90, α= .88; relationship and family*M*= 3.95, *SD* = .90, α = .81; world well-being*M*= 1.87, *SD* = 1.02, α = .86; political influence *M* = 1.54, *SD* = .81, α = .69; friends *M* = 3.11, *SD* = .97, α = .81; financial success *M* = 2.61, *SD* = .97, α = .73; and creativity *M* = 2.91, *SD* = .76, α = .57.

Results

As in Study 1, lifetime and current measures of depression correlated positively, *r* = .39, *P* < .001, and current mania and depression correlated negatively, *r* = −.24, *P* < .001. The positive correlation between the HPS and IDD-L was significant (with a sample of over 800) but weak, *r* = .16, *P* < .001. In contrast to the unexpected pattern in Study 1, vulnerability to hypomania and current hypomanic symptoms correlated significantly, *r* = .33, *P* < .001.

Correlations of mood measures with incentive sensitivity and goals—
Correlations of the mood-related measures with the BIS/BAS scales are in Table 4. As in Study 1, HPS related positively to all incentive-sensitivity scales, but related only weakly (and inversely) to threat sensitivity. Lifetime depression, as measured by the IDD-L, related to greater threat sensitivity, but not to BAS scales. Current manic symptoms related to all BAS scales, but the correlations tended to be lower than those for HPS. Current depression related only to BIS.

Correlations of the mood-related measures with the WASSUP scales are in Table 5. Consistent with the findings of Study 1, the HPS was strongly related to aspiration for popular fame, along with more modest associations for political influence and financial success. Also consistent with Study 1, correlations with the goals of having a positive impact on world well-being, having many friends, and having an ideal connection to partner and family were lower, though given the large sample they were all statistically significant. There also emerged a fairly substantial relation of HPS with the final WASSUP factor, which (as noted above) had elements of both creativity and personal fulfillment. Exploratory correlations with the individual items of this factor revealed that its relation to HPS was driven largely by the items pertaining to creation ("you will create a great work of art, music, or poetry," "you will write a popular book"). Correlations with the items on personal fulfillment ("you will do only things you really like to do, and nothing else," "each day of your work will be fulfilling") averaged only .09.

Current manic symptoms related at modest levels to all of the WASSUP scales except for having a positive impact on world well-being. All correlations for depression-related measures were modest. Both lifetime and current depression related inversely to goals of having many friends, having an ideal relationship with a partner and family, and achieving financial success.

As in Study 1, we computed partial correlations of the HPS with incentive-related measures, controlling for current symptoms of both mania and depression and controlling for depression vulnerability. These are in Table 6. Also shown are partial correlations of the IDD-L with the incentive-related measures, controlling for both kinds of current mood symptoms and HPS scores. As was the case in Study 1, these results were generally similar to the bivariate correlations.

To be certain that the association of hypomania with goal setting was not simply a product of variation within the lower range of HPS scores (which could not be ruled out in Study 1, as that sample had few extremely high scorers), we conducted another, more stringent set of tests.

We extracted persons with HPS scores at or above the cutoff of 35 that designates elevated risk of mania (Kwapil et al., 2000) and compared them against all other persons in the sample (note that including the full range below the cutoff rather than a selected set of low scorers works against our finding a difference between groups). The criterion of 35 was met by 33 of this sample (4%). Comparisons by analysis of variance confirmed that these persons had goal endorsements that were significantly higher than those of the rest of the sample for popular fame, political influence, and creative fulfillment, all Ps < .001, but not for goals in the other categories (Fig. 1).

Redundancy with incentive sensitivity—As in Study 1, we explored whether the associations of HPS scores with high goals were redundant with relations between HPS and BIS/BAS scales, using multiple regression analyses in which we predicted HPS scores from the BIS/BAS scales and a goal factor to which HPS had related (in this case, at above .20). The subsample for these analyses was 169. As in Study 1, the WASSUP and BIS/BAS scales accounted for partially independent variance in HPS scores. BIS/BAS scales and the goal of popular fame jointly accounted for 28% of the variance in HPS scores, with significant contributions made by Fun seeking (β = .39, P < .001) and fame goals (β = .19, P < .01). The model involving financial success accounted for 27% of the variance in HPS scores, with significant individual contributions made by Fun seeking (β = .43, P < .001) and financial goals (β = .15, P < .03). The analysis with political aspirations accounted for 29% of the variance in HPS scores, with significant contributions made by Fun seeking (β = .43, P < .001) and political-influence goals (β = .22, P < .002). The analysis involving creative aspirations accounted for 34% of the variance in HPS scores, with significant contributions made by Fun seeking (β = .40, P < .001) and creative goals (β = .31, P < .002). When all four of these WASSUP scales were included in the same model, the adjusted R^2 was .37, and Fun Seeking, and aspirations to both political influence and creativity goals made significant independent contributions to prediction.

Specificity of goal setting in hypomania?—The results pertaining to the WASSUP scales suggest that mania proneness relates to the setting of certain kinds of goals—in particular, those pertaining to popular celebrity, money, and political influence. However, it is possible that the tendency for these particular goals to relate to the HPS is at least partly a product of differences in the range of endorsements by the sample as a whole. That is, although we tried to name goals that were unrealistically high in each case, the goals varied substantially in the extent to which participants endorsed them. All 30 goals in this version of the WASSUP had responses across the full range of response options, but means ranged from 1.36 (for "you will be president of your country") to 4.28 (for "each day of your work will be fulfilling"). Perhaps the tendency of mania-vulnerable people to endorse high aspirations was masked on items on which other people also endorsed high aspirations.

To test the plausibility of this reasoning, we computed the mean endorsement of each item among this sample, along with the correlation between HPS scores and each item across the sample. A correlation was then computed between these two measures for the 30 items of the WASSUP. The correlation that emerged was quite substantial, r (28) = −.60, P < .001. This suggests that the emergence of different levels of associations for different sorts of goals may have been partly artifactual. However, that interpretation does not fit well with the profile of means in Fig. 1. It is clear from those means that excessive ambitions of persons high in hypomania were not constrained by a ceiling on potential responses in at least three domains (positive impact on world wellbeing, having many friends, and financial success). This suggests that something substantive differentiates the goal categories on which differences emerged from those on which differences did not emerge.

Discussion

Study 2 replicated several aspects of the pattern of Study 1. First, the correlations of the mood-related measures with the BIS/BAS scales were very similar in most respects to those found earlier. Again the HPS related significantly to all three subscales reflecting incentive sensitivity. These associations again remained present even when controls were instituted for current manic and depressive symptoms and lifetime depression.

The correlations with the revised item set of the WASSUP also produced a pattern that was very consistent with the earlier results. HPS scores related most strongly to the goal of popular fame, with most modest associations with goals of political and financial success, and significant but small associations with other types of goals. Although we added several new items reflecting interpersonal goals, concerning both friendships and family relationships, these goals did not relate as strongly to HPS scores. Nor did HPS scores relate strongly to items intended to reflect goals pertaining to the greater social good.

Finally, Study 2 replicated the finding that elevated goal setting made a contribution to predicting manic vulnerability (in the form of HPS scores) that was somewhat independent of the contribution of incentive sensitivity. As in Study 1, each goal factor that had been strongly related to HPS made a unique contribution (when tested separately) after controlling for BAS scores.

Study 2 added three things to the picture beyond the findings of Study 1. The first was a relationship of HPS to setting goals of creative accomplishment. The second was evidence that the relation of hypomania to goal setting was strongest for goals that were endorsed more rarely by people lower in hypomania. This leaves an ambiguity about the goals that were endorsed more often. It may be that the relative lack of association between hypomania and endorsement of those goals reflects a ceiling effect on endorsement. On the other hand, the endorsement rate for these goals was typically not so high as to preclude an association with hypomania.

The third element added by Study 2 was clear evidence that the effects obtained were not dependent on associations that existed only in the lower range of HPS scores. That is, the effects also emerged when the 33 persons with elevated scores were compared to the rest of the sample.

General discussion

Before considering the implications of these findings, it is important to note several limitations of this work. Perhaps the most important is the reliance on self-report measures. It will be important for future research to test for similar relations using interview-based measures of symptoms and laboratory-based measures of goal-setting. Second, we tested undergraduate samples at risk for the development of manic symptoms rather than people with diagnosed mania. We did so partly because it would be hard to interpret high goal-setting among people diagnosed with bipolar disorder. That is, in a clinical sample, high goal-setting could be a response to losses incurred during a period of mania. Further, young adults are at a stage of life when it is natural to consider what goals they might take up, while not yet having had large amounts of experience pertaining to extreme life goals. Nonetheless, the use of student samples represents an important boundary condition on the findings. It ultimately will be important to examine ambitions among people with bipolar I disorder as well.

Despite these limitations, the findings seem to have implications for both mania and depression. With regard to depression, the most interesting finding is the absence of associations involving lifetime or current depression symptoms with goal setting. Lifetime depression related to threat sensitivity (the BIS scale) in both studies. However, across studies there was no evidence that

vulnerability to depression relates to setting high goals. Instead, lifetime and current depression were tied to setting lower goals in a few domains.

This lack of connection between depression and high goal setting is consistent with a number of earlier findings. Using a different measure of holding high standards for oneself, several prior studies found that this variable does not play a unique role either as a correlate of depression (Carver & Ganellen, 1983;Carver, Ganellen, & Behar-Mitrani, 1985; Carver, LaVoie, Kuhl, & Ganellen, 1988) or as a predictor of the development of symptoms of depression (Carver, 1998). Other research has found the even perfectionism does not relate to maladjustment, if the person also has high social problem solving skills (Chang, 2002).

It is important to distinguish between adopting high goals, on the one hand, and cognitive/ affective responses to a failure to meet a high goal, on the other (cf. Flett, Hewitt, Blankstein, & Gray, 1998). Substantial evidence exists that how one responds to failures to attain goals is an important predictor of depression (e.g., Carver, 1998; Carver et al., 1988; Flett et al., 1998). It is sometimes mistakenly inferred from this that simply having high goals represents a vulnerability to depression. The data reported here join those reported previously in indicating that not to be the case.

Implications for mania

These findings also appear to have implications for understanding mania proneness. In both data sets, lifetime vulnerability to mania related to high goals—indeed, goals that could readily be seen as grandiose. These associations did not depend on presence of current symptoms. That is, the relations remained in place even after controlling for current symptoms of mania and depression, and lifetime depression. That basic finding appears quite robust. This research is the first to have uncovered such associations with respect to a range of life goals.

The pattern of associations across studies was consistent with the idea that this tendency to set high goals was clearest for extrinsic goals: aspirations to fame, money, and political influence. An additional analysis, however, raised a question about how to interpret that apparent specificity. That is, in Study 2 the link between vulnerability to mania and goal setting related fairly strongly to the "unusualness" of the goal. Among lofty goals endorsed by most of the sample, the link from goal setting to manic vulnerability was weak. The association emerged strongly only for goals that were endorsed rarely across the sample. On the other hand, there was also evidence that the association was not strong among *all* rarely endorsed goals.

This mixture of evidence means that we cannot be certain that people with manic vulnerability have high goals only in areas of extrinsic motivation. Nonetheless, the apparent specificity of the association to extrinsic goals raises some interesting questions. One of them is whether this investment in extrinsic goals is related to a desire for power, a desire for personal influence, a desire to be the center of attention, or other underlying values.

Goals and incentive sensitivity

That those at risk for mania endorse extreme goals appears very consistent with a view in which mania involves the excessive engagement of an incentive system (Depue & Iacono, 1989; Depue & Zald, 1993; Johnson & Roberts, 1995). High goals definitely suggest incentive pursuit. These findings also dovetail well with findings that lifetime vulnerability to mania predicts higher goal-setting in laboratory paradigms (Johnson 2005; Johnson, Ruggero, & Carver, 2005) and greater expectations for success in school and employment (Meyer & Krum-Merabet, 2003). The findings also resonate conceptually with the fact that mania and manic risk relate to sensitivity to incentives (Meyer et al., 1999, 2001), findings that were also replicated here. This set of findings as a group may help to explain the superior

accomplishments demonstrated by some people with bipolar disorder, as well as family members of probands with bipolar disorder.

It is of considerable interest, however, that the contribution made by elevated goal setting to the prediction of manic risk (HPS scores) in the studies reported here was largely distinct from the contribution made by incentive sensitivity. Fun seeking (in both studies) and Drive (in Study 1), which both reflect incentive sensitivity, made separate contributions to prediction. So, however, did elevated goals.

Ambitious, even grandiose, goal-setting appears to be a fundamental characteristic of mania-proneness. Beyond these stable elevations, however, goal-setting also may become further intensified with mood changes. Research points towards shifts in goal-related confidence that are state-dependent. In one such study, current symptoms correlated with perceiving goals as more attainable (Meyer, Beevers, & Johnson, 2004). Three further laboratory studies now suggest that confidence increases along with increase in positive affect, among students vulnerable to mania (Johnson et al., 2005; Stern & Berrenberg, 1979), as well as people with bipolar I disorder in remission (Johnson & Ruggero, 2004, manuscript in preparation). In each case, success caused increases in confidence that were more pronounced among people who are mania-prone.

Such state-dependent shifts in confidence may have important implications for the course of disorder. Life events involving success (Johnson et al., 2000, 2004) and high goal engagement (Lozano & Johnson, 2001) have both been shown to predict manic symptoms. For people prone to mania, life events involving success may boost confidence, leading to yet more intense pursuit of already ambitious goals. The findings reported here, however, suggest that at least two aspects of intense goal pursuit—the high ambition and the sensitivity to potential new incentives—are particularly present among people who are vulnerable to manic symptoms, even after controlling for any current symptoms.

Acknowledgments

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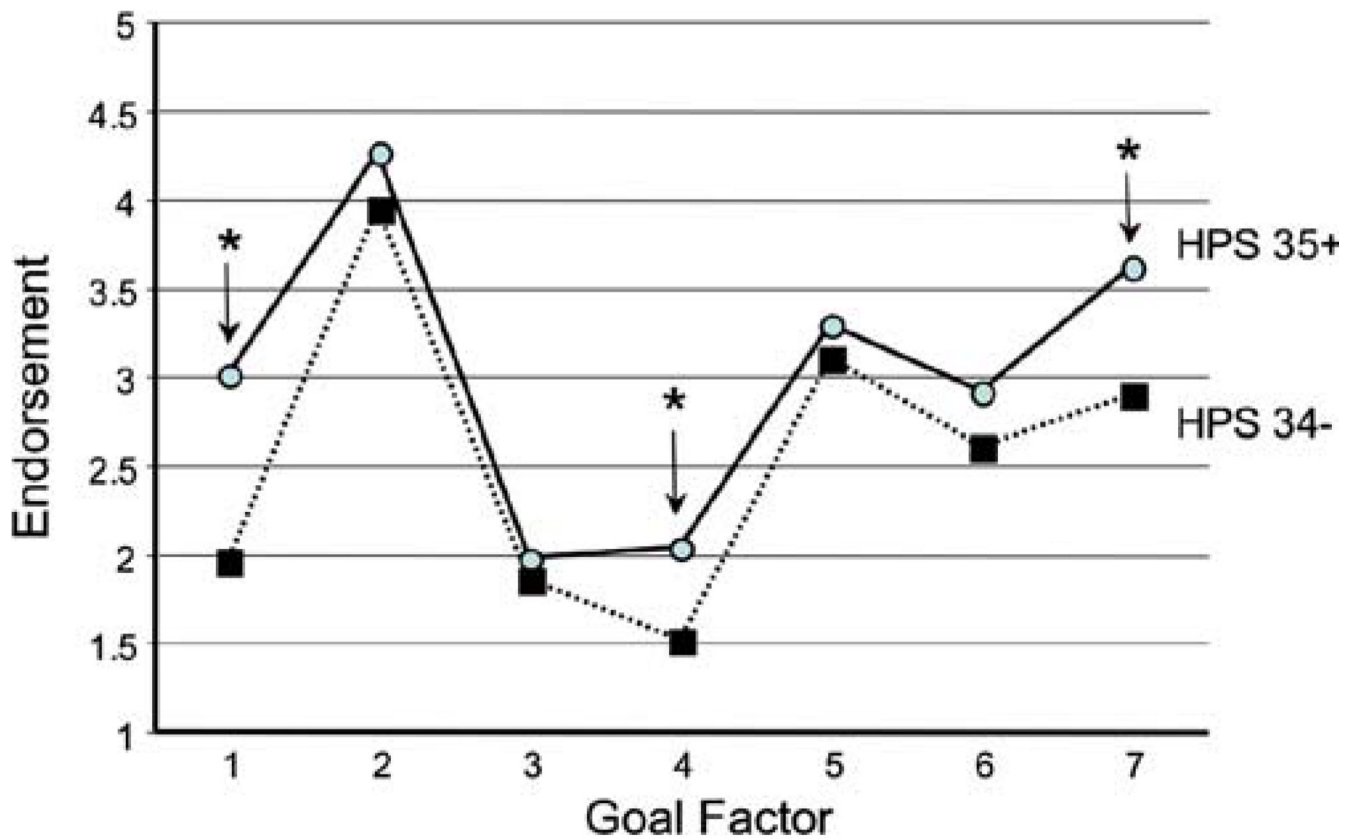
Fig. 1.
Endorsement of 7 sets of highly ambitious goals by persons high in manic vulnerability ($N =$ 33) and persons lower in vulnerability ($N = 791$), Study 2 (including only participants with complete goals data). The groups differ significantly on factor 1 (popular fame), factor 4 (political influence), and factor 7 (creativity). They do not differ significantly on factor 2 (relationships and family), factor 3 (world well-being), factor 5 (friends), or factor 6 (financial success)

Table 1

Correlations of BIS/BAS scales with mood-related measures, Study 1

	Lifetime hypomania (HPS) $N = 371$	Lifetime depression (IDD-L) $N = 411$	Current manic symptoms (SRMI) $N = 138$	Current depression symptoms (BDI) $N = 138$
Drive (BAS)	.39[***]	−.02	.13	−.22[**]
Reward responsiveness (BAS)	.20[***]	.11	.01	−.03
Fun seeking (BAS)	.47[***]	.10	.21[*]	−.06
Threat sensitivity (BIS)	−.09	.25[***]	−.04	.20[*]

[*] $P < .05$,

[**] $P < .01$,

[***] $P < .001$

Table 2

Correlations of WASSUP scales with mood-related measures, Study 1

	Lifetime hypomania (HPS) N = 177	Lifetime depression (IDD-L) N = 210	Current manic symptoms (SRMI) N = 142	Current depression symptoms (BDI) N = 142
Popular fame	.45***	.06	.10	.12
Political influence	.22**	.00	−.05	.20*
Medical fame	−.04	−.13	.20*	−.12
Financial success	.20**	−.05	−.06	.04
Love from friends	.10	.02	.03	−.03

*
$P < .05$,

**
$P < .01$,

***
$P < .001$

Table 3

Partial correlations of lifetime hypomania and lifetime depression with BIS/BAS and WASSUP scales, controlling for the alternate vulnerability and concurrent symptoms of mania and depression, Study 1

	Lifetime hypomania (HPS)	Lifetime depression (IDD-L)
BIS/BAS (*N* = 125)		
Drive	.45[***]	.02
Reward responsiveness	.21[*]	.11
Fun seeking	.46[***]	.07
Threat sensitivity	−.17	.21[*]
WASSUP (*N* = 125)		
Popular fame	.42[***]	−.04
Political influence	.20[*]	−.10
Medical fame	−.06	−.10
Financial success	.22[*]	−.10
Love from friends	.10	.02

[*]
P < .05,

[***]
P < .001

Table 4

Correlations of BIS/BAS scales with mood-related measures, Study 2

	Lifetime hypomania (HPS) $N = 362$	Lifetime depression (IDD-L) $N = 296$	Current manic symptoms (SRMI) $N = 284$	Current depression symptoms (BDI) $N = 285$
Drive (BAS)	.35***	−.06	.19**	−.05
Reward responsiveness (BAS)	.20***	.03	.14*	−.01
Fun seeking (BAS)	.45***	.03	.18**	−.04
Threat sensitivity (BIS)	−.14**	.20***	−.11	.14*

*
P < .05,

**
P < .01,

***
P < .001

Table 5

Correlations of WASSUP scales with mood-related measures, Study 2

	Lifetime hypomania (HPS) $N = 826$	Lifetime depression (IDD-L) $N = 685$	Current manic symptoms (SRMI) $N = 832$	Current depression symptoms (BDI) $N = 832$
Popular fame (WASSUP)	.44**	−.06	.21**	−.03
Political influence (WASSUP)	.27**	−.06	.12*	−.02
Worldwide well-being (WASSUP)	.14**	−.02	.05	−.02
Financial success (WASSUP)	.23**	−.14**	.14**	−.08
Family and partner (WASSUP)	.16**	−.11*	.14**	−.09**
Friends WASSUP)	.16**	−.12*	.17**	−.12**
Creation and fulfillment (WASSUP)	.38**	.02	.16**	−.03

*
P < .01,

**
P < .001

Note: Exact Ns vary somewhat due to occasional missing data on WASSUP scales

Table 6

Partial correlations of lifetime hypomania and lifetime depression with incentive-related scales, controlling for the alternate vulnerability and concurrent symptoms of mania and depression, Study 2

	Lifetime hypomania (HPS)	Lifetime depression (IDD-L)
BIS/BAS (*N* = 283)		
Drive	.33[**]	−.10
Reward responsiveness	.16[*]	.02
Fun seeking	.42[**]	−.02
Threat sensitivity	−.15[*]	.18[*]
WASSUP (N = 680)[a]		
Popular fame (WASSUP)	.41[**]	−.13[*]
Political influence (WASSUP)	.26[**]	−.10[*]
Worldwide well-being (WASSUP)	.14[**]	−.04
Financial success (WASSUP)	.23[**]	−.16[**]
Family and partner (WASSUP)	.14[**]	−.10[*]
Friends (WASSUP)	.14[**]	−.10[*]
Creation and fulfillment (WASSUP)	.35[**]	−.02

[*] $P < .01$,

[**] $P < .001$

[a] Exact *N*s vary somewhat due to occasional missing data on WASSUP scales