

## ONLINE FIRST

# Mania With and Without Depression in a Community Sample of US Adolescents

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**Context:** There are limited data on the manifestations of mania in general community samples of adolescents.

**Objective:** To present the prevalence and clinical correlates of mania with and without depressive episodes in a representative sample of US adolescents.

**Design:** Cross-sectional survey of adolescents using a modified version of the Composite International Diagnostic Interview.

**Participants:** Ten thousand one hundred twenty-three adolescents aged 13 to 18 years identified in household and school settings.

**Main Outcome Measures:** Mania/hypomania with or without depression among those who met *DSM-IV* criteria for bipolar I or II disorder or major depressive disorder.

**Results:** Two and a half percent of youth met criteria for lifetime bipolar I or II disorder and 1.7%, for mania only. Twelve-month rates of mania with and without depression were 2.2% and 1.3%, respectively. There was a

nearly 2-fold increase in rates of mania from ages 13-14 to 17-18 years. Mania with depression was associated with a greater number of all indicators of clinical severity including symptom number and severity, role disability, severe impairment, comorbidity, and treatment compared with depression alone, whereas correlates of mania were similar among those with mania with or without depression.

**Conclusions:** The increasing prevalence of bipolar disorder with increasing age and the comparable rate of bipolar disorder with those of adult samples highlight adolescence as the peak period of onset of mania. The clinical significance of mania plus depression as demonstrated by a 1 in 5 suicide attempt rate and nearly 2 months per year of role impairment in adolescence has important implications for early intervention. The evidence for independence of mania from depression warrants additional scrutiny in the diagnostic nomenclature and etiologic dissection of bipolar disorder.

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**P**ROSPECTIVE STUDIES OF community samples of adolescents<sup>1-3</sup> support retrospective reports from community samples of adults that have indicated that the onset of bipolar disorder often emerges in adolescence.<sup>4</sup> Prevalence estimates from cross-sectional studies of adolescents in international settings and specific regions of the United States that range from 1.0% to 1.4% for lifetime<sup>2,3,5,6</sup> and from 0.2% to 2.5% for narrower prevalence periods of 6 or 12 months<sup>7-10</sup> have been shown to underestimate the true prevalence of bipolar disorder that has ranged from 2% to 5% in prospective cohort studies.<sup>11-13</sup> Variability in these estimates is due at least in part to methodological differences in the assessment and the target diagnostic criteria for mania and depression.<sup>14</sup>

The concept of “bipolarity” implies the presence of both hypomanic/manic and depressive episodes, yet a single manic episode is sufficient to warrant a diagnosis of bipolar I disorder in the *DSM-IV* criteria. In contrast, the criteria for bipolar II disorder require the presence of at least 1 major depressive episode plus a hypomanic episode. The requirement of depression in the diagnosis of bipolar II disorder is likely to circumvent the absence of impairment that may result from a diagnosis based solely on the presence of hypomania, but the actual empirical basis for these differential criteria is lacking. Few studies have systematically evaluated clinical correlates and impairment associated with hypomania or mania independent of depression. Although such distinctions are rarely necessary in clinical settings, where the consequences of mania and/or depres-

sion far exceed thresholds for duration, number of symptoms, impairment, and recurrence, the application of these criteria in community settings is far more complex, primarily because there is little empirical basis for distinguishing clinical significance.

The current report presents descriptive evidence for the prevalence and correlates of manic episodes in a large community survey of adolescents representative of the US general population. Application of liberal thresholds for entry into the mania and depression modules enabled us to derive estimates of the mania/hypomania spectrum that approximate the dimensional approaches now under investigation in international studies of adults.<sup>15</sup> We also investigate differences in the prevalence rates and correlates of mania among those with and without major depressive episodes.

## METHODS

### SAMPLE AND PROCEDURE

The National Comorbidity Survey Adolescent Supplement (NCS-A) is a nationally representative face-to-face survey of 10 123 adolescents aged 13 to 18 years in the continental United States.<sup>16</sup> The survey was administered by the professional interview staff of the Institute for Social Research at the University of Michigan. The NCS-A was carried out in a dual-frame sample that included a household subsample and a school subsample.<sup>17-19</sup> The overall NCS-A adolescent response rate combining the 2 subsamples was 82.9%. One parent or parent surrogate of each participating adolescent was asked to complete a self-administered questionnaire that contained informant questions about the adolescent's mental health. These recruitment and consent procedures were approved by the human subjects committees of both Harvard Medical School and the University of Michigan. Once the survey was completed, cases were weighted for variation in within-household probability of selection (in the household subsample) and for residual discrepancies between the sample and the US population on the basis of sociodemographic and geographic variables. These weighting procedures are discussed in more detail elsewhere.<sup>17,18</sup> Sociodemographic variables included in these analyses were age (in years), sex, and race/ethnicity.

The weighted sociodemographic characteristics of the study sample have been presented previously.<sup>20</sup> About half the sample was male (51.3%) and the mean age was 15.2 years, with a larger proportion of youth aged 13 to 14 years (36.2%) and approximately equal distributions of youth aged 15, 16, and 17 to 18 years. The sample comprised 65.6% non-Hispanic white individuals, 15.1% non-Hispanic black individuals, and 14.4% Hispanic individuals.

### MEASURES

Details of the diagnostic and risk factor measures are described by Merikangas et al.<sup>16</sup> Briefly, adolescents were administered a modified version of the World Health Organization Composite International Diagnostic Interview version 3.0 (CIDI), a fully structured interview administered by trained lay interviewers to generate *DSM-IV* diagnoses.<sup>19</sup> Copies of the adolescent version of the CIDI are available on request. Lifetime disorders assessed in the CIDI included mood episodes and disorders (major depressive disorder [MDD] or dysthymic disorder, mania, and hypomania), anxiety disorders (agoraphobia, generalized anxiety disorder, panic disorder, separation anxiety

disorder, social phobia, specific phobia, and posttraumatic stress disorder), behavior disorders (oppositional defiant disorder and conduct disorder), attention-deficit/hyperactivity disorder, eating disorders (anorexia nervosa, bulimia nervosa, and binge-eating disorder), and substance use disorders (alcohol abuse/dependence and drug abuse/dependence). Parents/caregivers provided information on their adolescent offspring for a subset of the disorders. The current analyses are based on adolescent-reported mania and depression from the adolescent interview. Definitions of all psychiatric disorders adhered to *DSM-IV* criteria. Diagnostic hierarchy rules were applied to all disorders except substance use disorders. Copies of the diagnostic algorithms are available by request.

Measures of symptom severity among 12-month cases using a self-report version of the Young Mania Rating Scale (YMRS)<sup>21</sup> for mania/hypomania and the Quick Inventory of Depressive Symptomatology Self-Report (QIDS-SR)<sup>22</sup> for major depressive episode were embedded in the diagnostic modules for mania and depression, respectively. The YMRS was based on a fully structured respondent report version developed for parent reports.<sup>23</sup> Severity was assessed for the most severe month in the past year among those respondents who reported an episode of either mania or depression during the past 12 months. Standard YMRS and QIDS-SR cut points were used to define episodes as severe (including original YMRS and QIDS-SR ratings of very severe, with ratings in the range of  $\geq 25$  on the YMRS and  $\geq 16$  on the QIDS-SR), moderate (ratings of 15-24 on the YMRS and 11-15 on the QIDS-SR), mild (ratings of 9-14 on the YMRS and 6-10 on the QIDS-SR), or not clinically significant (ratings of 0-8 on the YMRS and 0-5 on the QIDS-SR). We did not collect data on differences in the accuracy of recall for the period of 12 months used in the present study compared with those of the QIDS-SR (30 days) and the YMRS (7 days).

Role impairment among 12-month cases was assessed with the Sheehan Disability Scale.<sup>24</sup> As with the YMRS and QIDS-SR, for the Sheehan Disability Scale, the respondents were to focus on the 1 month in the past year when their mania/hypomania or major depressive episode symptoms were most severe. The Sheehan Disability Scale questions asked respondents to rate separately how much the condition interfered during that month with their home management, work, social life, and personal relationships using a 0 to 10 visual analog scale of none (0), mild (1-3), moderate (4-6), severe (7-9), and very severe (10). The maximum value endorsed by respondents across the 4 areas was used as an indication of past-year impairment. An additional item required respondents to estimate the total number of days in the previous year that they were totally unable to carry out their normal activities because of the symptoms of either mania or depression.

### DEFINITION OF MANIA AND BIPOLAR DISORDER

*DSM-IV* criteria were applied to information collected in the adolescent CIDI mania and depression modules. We found a high degree of concordance between bipolar disorder derived from the adolescent CIDI compared with a clinical diagnostic interview of parents and youth.<sup>25</sup> The screening probes for mania included the following questions for increased excitement and energy (ie, "Some people have times lasting anywhere between a few hours and a few weeks when they feel much more excited and full of energy than usual. Their minds go too fast. They talk a lot. They are very restless or unable to sit still and they sometimes do things that are unusual for them, such as taking many risks or spending too much money. Have you ever had a time like this lasting several hours or longer?") and for irritable or grouchy mood (ie, "Have you ever had a time last-

**Table 1. Prevalence of Mania With and Without Major Depression in 10 123 US Adolescents**

	Lifetime		12-mo	
	No. (Weighted %)	SE	No. (Weighted %)	SE
Mania/hypomania and MDD <sup>a</sup>	246 (2.5)	0.3	198 (2.2)	0.2
Mania only <sup>b</sup>	162 (1.7)	0.2	134 (1.3)	0.1
MDD only	805 (7.6)	0.4	625 (5.7)	0.4
Other disorder <sup>c</sup>	3897 (38.1)	0.8	2979 (29.2)	0.9
No disorder	5013 (50.0)	0.8	6187 (61.6)	0.9

Abbreviation: MDD, major depression disorder.

<sup>a</sup>Mania and MDD: bipolar I disorder; hypomania and MDD: bipolar II disorder.

<sup>b</sup>Bipolar I disorder.

<sup>c</sup>Other disorders: anxiety, eating, behavior, or substance.

ing anywhere between a few hours and a few weeks when most of the time you were so irritable or grouchy that you either started arguments, shouted a lot, or hit people?”). If the irritability probe was endorsed, the respondent was asked to document consequences. Thirty-seven and a half percent of the total sample of youth endorsed the energy/excitement probe, whereas 22.5% of youth endorsed the irritability probe with accompanying consequences. After probing the 2 series of mood change entry questions, and establishing duration of and age at episodes, a total of 30% of youth actually entered the mania symptom section of the interview. *DSM-IV* criteria for bipolar I and II disorders were applied. Symptomatic criteria for mania were fulfilled if at least 3 of 7 mania symptoms were endorsed among those with euphoria or elevated mood, whereas at least 4 of 7 mania symptoms were required for those who endorsed irritability only.

For the present study, we focus on comparisons between youth with mania/hypomania with or without depression among those who met *DSM-IV* criteria for bipolar I or II disorder or MDD. We divided adolescents into mutually exclusive subgroups based on the presence or absence of mania/hypomania and depression (mania or hypomania plus MDD) compared with mania only and MDD only. Additionally, adolescents with any other psychiatric disorder(s) and with no psychiatric disorder were included for comparative purposes. The following subgroups of mania/MDD were created for both lifetime and 12-month disorders: (1) hypomania or mania and MDD: mania (bipolar I disorder) or hypomania plus major depression (bipolar II disorder); (2) mania only: mania without MDD (bipolar I disorder); (3) MDD only: major depression alone; (4) other diagnosis: other disorders: anxiety disorders; behavior disorders; eating disorders; or substance use disorders; and (5) no diagnosis: no disorder. We refer to these subgroups as “mood disorder subgroups” throughout the article. With regard to the “disturbance of mood” criterion, 52.6% of those in the hypomania/mania and MDD group and 40.7% of those in the mania only group entered the mania section through both the elevated mood/activity symptom and irritability symptom probes, whereas 28.3% of the hypomania/mania and MDD group and 41.5% of the mania only group endorsed elevated mood/activity alone, and 19.1% of the hypomania/mania and MDD group and 17.8% of the mania only group endorsed irritability only.

## DATA ANALYSIS

We report lifetime and 12-month prevalence, sociodemographic characteristics, clinical correlates, and comorbid disorders by mood subgroups. Linear regression quantified the association between continuous outcomes (age at onset, number of mania or MDD episodes, number of mania or MDD symptoms, and severity of mania or MDD symptoms) and mood sub-

groups. Odds ratios (ORs) and their 95% confidence intervals were derived from logistic regression analyses to assess the associations between dichotomous outcomes and the mood groups. Subgroup comparisons included hypomania/mania and MDD vs mania only, hypomania/mania and MDD vs MDD only, and mania only vs MDD only for clinical variables.

Because of the weighting and clustering used in the NCS-A design, all statistical analyses were performed using the Taylor series linearization method, a design-based method implemented in SUDAAN (version 10.0; RTI International). Statistical significance was evaluated using 2-sided design-based tests at the .05 level.

## RESULTS

**Table 1** presents the lifetime and 12-month prevalence rates of the 5 subgroups. The prevalence rates for the mood subgroups were mania/hypomania and MDD = 2.5% lifetime, 2.2% past 12 months; mania only = 1.7% lifetime, 1.3% past 12 months; and MDD only = 7.6% lifetime, 5.7% past 12 months. Thirty-eight percent met *DSM-IV* criteria for another lifetime disorder (eg, anxiety, behavior, eating, and substance use disorders) and 29.2%, for another 12-month disorder.

The prevalence rates of the mood subgroups by sociodemographic characteristics are displayed in **Table 2**. The prevalence rates of hypomania/mania and MDD were significantly greater among females than males (3.3% vs 1.8%; OR, 2.9 [95% CI, 1.1-3.2]), as were those of MDD only (10.2% vs 5.1%; OR, 2.1 [95% CI, 1.7-2.7]). In contrast, the prevalence of mania only was significantly greater among males (2.2%) than females (1.2%) (OR, 0.5 [95% CI, 0.3-0.8]).

All of the mood disorder subgroups increased with age; 13- to 14-year-olds had significantly lower rates of hypomania/mania and MDD (2.1%) and mania only (1.4%) than 17- to 18-year-olds (3.1% [OR, 1.5 (95% CI, 1.0-2.1)] and 2.7% [OR, 2.0 (95% CI, 1.2-3.5)], respectively). There was also a direct increase in rates of MDD only with increasing age, with 13- to 14-year-olds having lower rates (5.2%) than 15- to 16-year-olds (8.2%) (OR, 1.6 [95% CI, 1.2-2.1]), who in turn had significantly lower rates than 17- to 18-year-olds (10.5%) (OR, 2.1 [95% CI, 1.6-2.9]). There were no significant differences in hypomania/mania and MDD or MDD only between ethnic subgroups, but Hispanic youth had significantly higher rates of mania only (2.6%) than white youth

**Table 2. Prevalence Rates of Mania and Major Depression by Sociodemographic Characteristics of 10 123 US Adolescents**

Sociodemographic Characteristics	Sample Size	Mania/Hypomania and MDD (n = 246)		Mania Only (n = 162)		MDD Only (n = 805)		Other Dx (n = 3897)		No Dx (n = 5013)	
		No. (%)	SE	No. (%)	SE	No. (%)	SE	No. (%)	SE	No. (%)	SE
Sex											
M	4953	78 (1.8)	0.3	89 (2.2)	0.4	260 (5.1)	0.5	2021 (40.1)	1.1	2505 (50.8)	1.0
F	5170	168 (3.3)	0.5	73 (1.2)	0.1	545 (10.2)	0.6	1876 (36.1)	1.0	2508 (49.2)	1.1
Age, y											
13-14	3870	76 (2.1)	0.3	58 (1.4)	0.3	218 (5.2)	0.6	1384 (36.7)	1.3	2134 (54.7)	1.5
15-16	3897	93 (2.6)	0.4	48 (1.5)	0.3	331 (8.2)	0.6	1499 (38.3)	1.7	1926 (49.4)	1.4
17-18	2356	77 (3.1)	0.6	56 (2.7)	0.5	256 (10.5)	0.8	1014 (40.1)	1.7	953 (43.6)	1.9
Race											
Hispanic	1914	51 (2.8)	0.7	43 (2.6)	0.5	181 (8.4)	0.9	748 (39.2)	1.6	891 (47.0)	2.1
Non-Hispanic black	1953	32 (1.5)	0.5	41 (2.1)	0.5	152 (7.3)	0.9	719 (37.1)	2.0	1009 (52.1)	1.8
Other	622	18 (2.0)	0.7	9 (1.2)	0.5	51 (8.4)	2.0	250 (36.1)	2.7	294 (52.4)	2.1
Non-Hispanic white	5634	145 (2.8)	0.3	69 (1.5)	0.2	421 (7.4)	0.5	2180 (38.3)	1.2	2819 (50.0)	1.2

Abbreviations: Dx, diagnosis; MDD, major depression disorder.

**Table 3. Clinical Characteristics of Mania and Depression by Lifetime Mood Disorder Groups<sup>a</sup>**

Clinical Characteristics	Mania/Hypomania and MDD (MD)		Mania Only (M)		MDD Only (D)		P Value <sup>b</sup>		
	No.	Mean (SE)	No.	Mean (SE)	No.	Mean (SE)	MD vs M	MD vs D	M vs D
Age at onset									
Mania	230	12.4 (0.3)	151	11.0 (0.3)	NA		<.001	NA	NA
MDD	246	11.5 (0.3)	NA		805	11.9 (0.2)	NA	.32	NA
Either mania/MDD	246	10.8 (0.3)	151	11.0 (0.3)	805	11.9 (0.2)	.35	.004	.04
No. of episodes									
Mania	218	13.5 (2.7)	140	5.9 (1.3)	NA		.02	NA	NA
MDD	183	7.5 (0.9)	NA		612	5.2 (0.4)	NA	.02	NA
No. of symptoms									
Mania	246	5.1 (0.1)	162	5.1 (0.1)	NA		.48	NA	NA
MDD	246	7.4 (0.1)	NA		805	6.8 (0.1)	NA	<.001	NA
Severity, 12-mo									
Mania <sup>c</sup>	176	17.4 (1.5)	113	15.8 (0.7)	NA		.67	NA	NA
MDD <sup>d</sup>	167	11.6 (0.6)	NA		437	10.4 (0.2)	NA	.04	NA

Abbreviations: MDD, major depression disorder; NA, not applicable.

<sup>a</sup>N = 10 123.

<sup>b</sup>Models adjusted for sex, age (3 levels), and race.

<sup>c</sup>Abbreviated Young Mania Rating Scale.

<sup>d</sup>Modified Inventory of Depressive Symptoms.

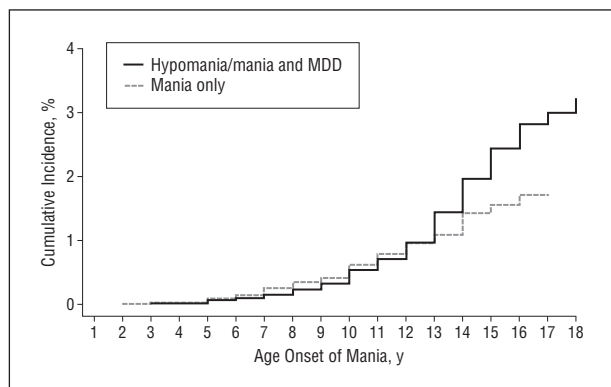
(1.5%) (OR, 1.8 [95% CI, 1.1-2.7]) but not non-Hispanic black youth (2.1%).

The clinical correlates of the mood subgroups are presented in **Table 3**. With the exception of a greater number of episodes of mania, other clinical correlates were comparable for those with hypomania/mania and MDD compared with those with mania only. However, relative to the MDD only group, hypomania/mania and MDD was associated with an earlier age at onset of mood symptoms ( $P = .004$ ), a greater number of MDD episodes ( $P = .02$ ), more MDD symptoms ( $P < .001$ ), and greater severity of depression symptoms ( $P = .04$ ).

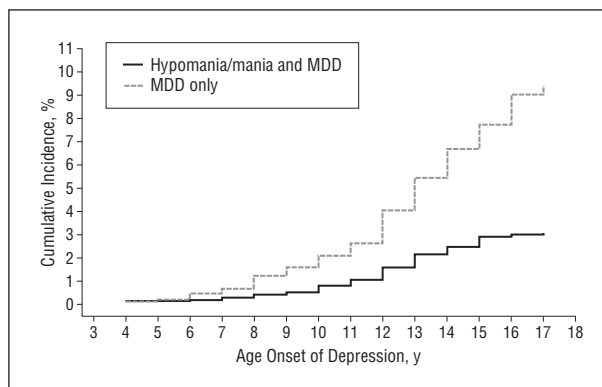
**Figure 1** depicts the age-specific incidence of mania among those in the hypomania/mania and MDD vs mania only subgroups based on retrospective recall of age at onset. The incidence rates between the 2 groups were almost equivalent until age 12 years. After age 13 years,

the hypomania/mania and MDD group had a significantly higher incidence rate of mania than the mania only group. The age-specific incidence of depression is shown in **Figure 2**. The MDD only group had a significantly higher incidence rate of depressive episodes than the hypomania/mania and MDD group across all ages.

**Table 4** displays the rates and ORs of recurrence, family history, suicide attempts, service use, and comorbid disorders by the mood groups. There were few differences in the clinical correlates of mania with regard to recurrence, suicide attempts, treatment rates, role disability, or severe impairment among those in the hypomania/mania and MDD group compared with the mania only group. By contrast, the hypomania/mania and MDD group had significantly greater family history of depression (OR, 2.4 [95% CI, 1.19-4.84]) and treatment for mood disorder symptoms (OR, 1.60 [95% CI, 1.12-



**Figure 1.** Age-specific incidence of mania with and without major depression disorder (MDD) based on recall of age at onset.



**Figure 2.** Age-specific incidence of depression by mania/hypomania with major depression disorder (MDD) vs MDD only based on recall of age at onset.

**Table 4. Clinical Correlates of Mania and Depression by Lifetime Mood Disorder Groups<sup>a</sup>**

Clinical Correlates	Mania/Hypomania and MDD (MD) (n = 246)		Mania Only (M) (n = 162)		MDD Only (D) (n = 805)		OR (95% CI) <sup>b</sup>		
	No. (%)	SE	No. (%)	SE	No. (%)	SE	MD vs M	MD vs D	M vs D
Recurrence									
Mania	151 (62.0)	5.1	71 (48.4)	8.2	NA		1.72 (0.79-3.73)	NA	NA
MDD	155 (65.2)	4.7	NA		455 (60.5)	2.7	NA	1.23 (0.82-1.85)	NA
Family history <sup>c</sup>									
Mania	153 (69.5)	3.9	93 (72.4)	6.0	NA		0.78 (0.41-1.50)	NA	NA
MDD	171 (86.8)	3.6	NA		436 (72.6)	3.0	NA	2.40 (1.19-4.84) <sup>d</sup>	NA
Suicide attempts	48 (21.9)	4.6	8 (7.4)	3.8	102 (16.3)	2.9	2.77 (0.72-10.62)	1.45 (0.72-2.90)	0.52 (0.16-1.71)
Treatment for mood disorder	122 (52.3)	4.0	50 (34.4)	6.5	319 (39.9)	2.5	1.70 (0.84-3.44)	1.60 (1.12-2.28) <sup>d</sup>	0.94 (0.50-1.77)
Role disability, past 12 mo <sup>e</sup>	125 (54.2)	5.6	59 (42.0)	5.2	280 (40.6)	3.6	1.58 (0.88-2.82)	1.91 (1.07-3.42) <sup>d</sup>	1.21 (0.72-2.04)
Impairment, past 12 mo <sup>f</sup>									
Very severe	45 (24.4)	5.0	19 (14.7)	3.8	82 (16.1)	2.4	1.62 (0.83-3.19)	2.52 (1.52-4.17) <sup>d</sup>	1.55 (0.83-2.88)
Severe	107 (56.6)	5.9	67 (55.8)	6.7	261 (46.9)	3.2			
Moderate	33 (17.5)	3.6	31 (16.8)	3.9	163 (28.0)	3.9			
Mild	6 (1.3)	0.6	10 (10.3)	4.7	41 (7.4)	1.7			
None	1 (0.2)	0.2	2 (2.4)	2.2	4 (1.7)	1.1			
Comorbid disorders (lifetime)									
Anxiety	167 (66.3)	4.5	96 (49.0)	5.1	396 (48.1)	2.2	2.05 (1.14-3.70) <sup>d</sup>	2.34 (1.47-3.72) <sup>d</sup>	1.14 (0.73-1.79)
Attention-deficit/hyperactivity disorder	24 (18.8)	4.5	26 (26.9)	6.8	59 (13.4)	3.1	1.93 (0.91-4.10)	1.41 (0.70-2.85)	1.52 (0.73-3.15)
Conduct/oppositional defiant disorder	73 (51.9)	5.6	45 (37.6)	6.3	120 (29.9)	6.0	0.58 (0.27-1.22)	2.45 (1.19-5.05) <sup>d</sup>	1.27 (0.48-3.33)
Eating	30 (8.3)	2.1	13 (11.1)	2.9	55 (8.1)	1.7	1.74 (0.92-3.31)	1.09 (0.50-2.36)	1.88 (0.84-4.23)
Substance	88 (38.1)	5.4	44 (28.2)	5.5	163 (21.8)	3.1		2.27 (1.09-4.75) <sup>d</sup>	1.30 (0.57-3.00)
No. of classes of disorders									
0	39 (16.9)	3.6	34 (26.6)	5.7	261 (31.7)	2.7	1 [Reference]	1 [Reference]	1 [Reference]
1 (vs 0)	80 (33.7)	4.7	55 (26.0)	4.4	340 (42.2)	2.8	1.93 (0.95-3.91)	2.37 (1.23-4.58) <sup>d</sup>	1.23 (0.60-2.52)
≥2 (vs 1 or 0)	127 (49.4)	4.3	73 (47.4)	5.3	204 (26.2)	2.8	1.15 (0.63-2.11)	2.73 (1.62-4.58) <sup>d</sup>	2.37 (1.20-4.68) <sup>d</sup>

Abbreviations: MDD, major depression disorder; NA, not applicable; OR, odds ratio.

<sup>a</sup>N = 10 123.

<sup>b</sup>Models controlled for sex, age (3 levels), and race.

<sup>c</sup>Among those who completed mood disorder section.

<sup>d</sup>Significant.

<sup>e</sup>Number of days out of role during past year.

<sup>f</sup>Very severe/severe vs moderate/mild/none.

2.28]) relative to those with MDD only. Those with hypomania/mania and MDD were also more likely to have spent a greater number of days out of role than those with MDD only (OR, 1.91 [95% CI, 1.07-3.42]) and to have a greater proportion with severe impairment (OR, 2.52 [95% CI, 1.52-4.17]). Subsetting to those with 12-month disorders led to some minor group differences in

the clinical correlates of mood disorders. Differences between the number of episodes and family history in the mania only and MDD only groups were no longer significant.

Analyses of lifetime comorbidity revealed that those in the hypomania/mania and MDD group were about twice as likely to have co-occurring anxiety (OR, 2.05 [95%

CI, 1.14-3.70]) than those with mania only. Adolescents in the hypomania/mania and MDD group were about twice as likely to have anxiety (OR, 2.34 [95% CI, 1.47-3.72]), behavior (OR, 2.45 [95% CI, 1.19-5.05]), and substance use (OR, 2.27 [95% CI, 1.09-4.75]) disorders as those with MDD only. No significant differences emerged between the mania only and the MDD only subgroups. However, the mania only group had a greater number of classes of comorbid disorders than the MDD only group (OR, 2.37 [95% CI, 1.20-4.68] for 2 or more vs only 1 or no comorbid disorders).

There were no significant differences in rates of 12-month comorbid disorders between the hypomania/mania and MDD and mania only groups (data not shown). The hypomania/mania and MDD group did have a higher prevalence of 12-month anxiety disorders than the MDD only group. Twelve-month attention-deficit/hyperactivity disorder rates were significantly greater among those with mania only compared with those with MDD only.

#### COMMENT

Confirming the results of prior community surveys,<sup>14,26</sup> these findings reveal that the prevalence of bipolar disorder in youth approaches the magnitude that has been observed in adults, underscoring the early onset of this condition in the general population. A total of 2.5% of youth met criteria for lifetime bipolar I or II disorder and 1.7%, for mania only. Twelve-month rates of mania with and without depression were 2.2% and 1.3%, respectively, indicating that more than 80% of youth with a lifetime episode of bipolar disorder also met criteria during the past year. These estimates of mania alone approximate estimates of the cumulative incidence of mania derived from prospective studies of community-based samples in other countries and in specific geographic regions of the United States.<sup>27</sup> As expected, mania/hypomania with depression was associated with elevated levels of a range of clinical correlates and indicators of severity compared with either mania alone or depression alone. However, manic episodes alone were also found to have clinical significance in terms of disability and impairment, even when uncoupled from major depressive episodes.<sup>13,28</sup> These findings have important implications for the diagnostic nomenclature, clinical interventions, and studies of etiologic pathways underlying bipolar disorder.

#### SOCIODEMOGRAPHIC CORRELATES

Sociodemographic characteristics of mania in this study were similar to those of previous studies, with males having greater rates of mania only and females reporting greater rates of mania plus depression as well as depression only.<sup>29</sup> The increasing rates of all subgroups of mood disorders with increasing age, particularly major depression, highlight adolescence as the peak period of incidence of mania and bipolar disorder as demonstrated in both community surveys and high-risk studies<sup>30,31</sup> of youth as well as retrospective studies of adults with bipolar dis-

order. One unexpected finding was the greater rate of mania among Hispanic youth. In a parallel study of adolescents in Mexico using a common diagnostic interview, the 12-month prevalence of bipolar disorder of 2.5% was by far the highest rate reported in any population sample to date.<sup>7</sup> Potential methodologic or clinical explanations for an increased risk for mania in Hispanic youth should be pursued in future research.

#### MANIA ALONE VS MANIA AND DEPRESSION

Although the term *bipolar* implies fluctuation of mood states between mania and depression, earlier descriptions of the mania/hypomania spectrum considered depression as an independent dimension from mania.<sup>32</sup> In fact, a mood change was not even considered as a core feature of mania, which was proposed to be a “functional disturbance of brain with increased excitability” manifest by increased speed of all processes. The inclusion of unipolar mania and hypomania under the rubric of bipolar disorder in contemporary diagnostic nomenclature has not been widely studied,<sup>33</sup> and few community surveys of adults have actually presented data that enable investigation of the heterogeneity of mania and hypomania and their association with major depressive episodes. This is particularly surprising because of the consistent evidence from retrospective studies of adults<sup>4,34</sup> and prospective studies of adolescents that the peak incidence period for mania symptoms is in the adolescent years.<sup>1-3</sup>

In the present study, there were few differences in the clinical manifestations, correlates, and consequences of mania between adolescents with mania with and without depression, thereby confirming parallel results of earlier community studies of adolescents.<sup>1-3</sup> The earlier onset and clinical significance of mania alone and the nearly equal proportion of comorbidity with other disorders (eg, behavior disorders, anxiety disorders, and substance use disorders) as with major depression in the present study provide some support for consideration of a mania as an independent dimension from depression. In fact, some follow-up studies have shown that only half of those with mania develop major or minor depression, with the remaining either continuing to exhibit only manic episodes or remitting as they progress through adulthood.<sup>1,3,35-38</sup> Clinical studies of differences in unipolar and bipolar mania have not yielded consistent evidence for support of unipolar mania as a distinct subgroup of bipolar disorder, but the low prevalence of mania alone in clinical settings has impeded conclusive investigation of this issue. Whereas some studies show a lack of distinguishing features of unipolar mania in terms of symptom profiles and treatment response in clinical studies,<sup>39</sup> others have demonstrated different longitudinal course and lower response to lithium than other forms of bipolar I disorder.<sup>40,41</sup>

#### MANIA AND DEPRESSION VS DEPRESSION ALONE

Our findings also corroborate findings from 2 earlier studies of adolescents that demonstrated greater severity of

clinical correlates of depression including a greater number of depressive symptoms and episodes among those with mania plus depression compared with those with depression alone.<sup>1-3</sup> As previously reported by Lewinsohn et al,<sup>2,3</sup> mania/hypomania with depression was associated with more suicide attempts and other indicators of severity of depression than either mania alone or depression alone, documenting the clinical significance of this condition in the general community. Other clinical data reinforce that people experiencing both depression and hypomania or mania have higher rates of suicidality,<sup>42</sup> particularly if co-occurring as a “mixed” presentation.<sup>43</sup> Likewise, a greater proportion of those with mania with depression had comorbid anxiety and behavior disorders, as well as greater role disability and severe impairment, than those with depression alone. However, there was a comparable increase in severity of depression when coupled with other primary conditions such as anxiety, eating, and behavior disorders, suggesting that there may be a lack of specificity of the link between mania and depression in inducing increased consequences in terms of impairment and disability. This suggests that, in some cases, depression could be a consequence of repeated episodes of mania rather than a core feature of a distinct disorder comprising both mania and depression, similar to the demoralization that occurs secondary to chronic problems associated with attention-deficit/hyperactivity disorder.<sup>44</sup> Additional research is necessary to address the extent to which depression may be a consequence of repeated episodes of mania or a core feature of a distinct subtype of bipolar disorder characterized by the traditional notion of fluctuations between extreme mood states.

## IMPLICATIONS

These findings highlight the importance of reconsideration of mania as a core feature underlying psychopathology in adolescents and have important implications for classification, clinical intervention, and understanding of bipolar disorder. The high prevalence and clinical significance of mania without depression suggest that the assessment of mania should receive greater attention in the evaluation of mood changes and disorders in adolescents in the community and treatment settings that occur outside the mental health specialty sector. Detection of mania is particularly important in light of the substantial evidence for inadequate recognition of “hidden bipolarity” that could lead to ineffective or even harmful treatment approaches<sup>45,46</sup> as well as the evidence for the development of substance use disorders as a major consequence of mania in population samples.<sup>47</sup> In fact, the lack of evidence of mania alone in clinical samples of both youth and adults could be attributable to the high frequency of behavioral disturbances that emerge as a consequence of mania that may obfuscate the core manifestations of mania. Follow-up of this sample is critical to distinguish characteristics of youth with transient manic episodes<sup>37</sup> from those for whom mania signals early manifestations of recurrent mood disturbances including bipolar disorder and its lifelong consequences.

With respect to classification, there has been an increasing call for dimensional assessment of symptoms of anxiety and mood disorders, but mania has not been high-

lighted as a salient construct in this discussion. Although there is substantial attention to irritability as a manifestation of mania,<sup>48-51</sup> there has been limited research on the mood elevation/activation dimension underlying mania that was manifest by the majority of adolescents in the present study.<sup>52,53</sup> As the *DSM-5* deliberations on changes in the diagnostic nomenclature move forward, it would also be worthwhile to consider whether mania without depression should continue to be considered in the bipolar disorder category or as a distinct category in the mood disorder section, parallel to “unipolar” major depression.

There are also profound clinical implications of our results. The finding that more than 1 of every 5 youth who manifest the traditional form of bipolar disorder, with episodes of both mania and depression, has made at least 1 suicide attempt is quite alarming in light of the young age and community setting of this sample. Likewise, the pervasive disturbance in daily role functioning that translates to nearly 2 months’ impairment in major life roles also raises serious concern, particularly because of the pivotal importance of the educational and social developmental milestones that occur during the transition from early adolescence to young adult life. The consequences of mania alone were also quite significant, with a nearly equal magnitude of role disability to that of major depression alone, with 70% of those with mania reporting severe impairment associated with their symptoms. Although it is reassuring that about half of these youth had sought help, less than half had been treated in the mental health sector, arguably the context best equipped for effective treatment of this condition.

Our findings of greater treatment use among those with mania plus depression as well as substantially lower rates of comorbid disorders among all of the youth with mania or depression alone also highlight the gap between community and clinical samples, where those with mania alone are clearly underrepresented. Therefore, one of the most important contributions of the present study and that of prior community studies is that the samples are not subject to the now well-established biases that characterize clinical samples including comorbidity, particularly with disruptive behaviors, and other factors that promote treatment referral.<sup>37,54,55</sup> Specialty mental health settings have been shown to be increasingly populated by youth with extreme manifestations of disturbances that do not represent the full spectrum of disorders in the general community. Future analyses that quantify the differences in clinical and community samples can help to increase the clinical relevance as well as generalizability of these findings.

## STRENGTHS AND LIMITATIONS

There are several limitations of the sampling and methods of this study. First, the cross-sectional nature of the survey limits our ability to characterize the progression and stability of mania and depression over time. Several prospective studies of adolescent mania have documented the predictors of the stability and consequences of mania/hypomania as these cohorts progress into adulthood.<sup>1,3,56</sup> Second, similar to previous studies of adolescent mania,<sup>1,3</sup> mania symptoms were based solely on the

report of the adolescent without external validation of episodes of mania. Studies of informant reports of bipolar disorder in clinical samples suggest that inclusion of a parent informant enhances the validity of the diagnosis of bipolar disorder in youth.<sup>57</sup> Therefore, future studies of the predictive validity of adolescent-reported mania are important to determine the extent to which these clinical samples may generalize to community samples. Third, the use of lay interviewers limited our ability to collect greater descriptive detail on the phenomenology of mania and depression. Fourth, these findings can only be generalized to adolescents because of the lower age limit of 13 years in the present study. Nevertheless, these data provide the most comprehensive information concerning the mania symptoms in a very large nationally representative sample of adolescents, which afforded sufficient power to conduct multivariate analyses of the correlates of mania.

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