Published in final edited form as:

Bipolar Disord. 2009 May ; 11(3): . doi:10.1111/j.1399-5618.2009.00671.x.

Examination of concordance between maternal and youth reports in the diagnosis of pediatric bipolar disorder

Joseph Biederman^a, Carter R Petty^a, Timothy E Wilens^a, Thomas Spencer^a, Aude Henin^a, Stephen V Faraone^b, Eric Mick^a, Michael C Monuteaux^a, Deborah Kenealy^a, Tara Mirto^a, and Janet Wozniak^a

^aPediatric Psychopharmacology Unit, Massachusetts General Hospital, Boston, MA

^bDepartment of Psychiatry, Neuroscience and Physiology, State University of New York Upstate Medical University, Syracuse, NY, USA

Abstract

Objective—While concordance between mother and child report continues to be the gold standard in the assessment of pediatric bipolar disorder, uncertainty develops when a mother's report is not endorsed by the youth. To this end we compared discordant (mother positive and youth negative) and concordant (mother and youth positive) cases.

Methods—Subjects were 98 adolescents (12–19 years of age) derived from family studies of bipolar disorder in youth who had both self-reported and mother-reported assessments. Comparisons were made between discordant (n = 35) and concordant (n = 59) cases on a wide range of clinical correlates.

Results—Mothers in both groups reported similar rates of symptoms of mania and depression. Within the concordant group, mothers and youth reported similar rates of symptoms of mania. There were no differences between the concordant and discordant groups in onset, duration, or impairment of mania, rates of psychiatric hospitalization, cognitive variables, or rates of disorders in family members.

Conclusions—The similarities between discordant and concordant reports in symptomatology of mania and depression, rates of comorbidities, treatment needs, and other clinical correlates suggest that a mother-based diagnosis of mania should not be discounted in discrepant cases in which the youth fails to endorse the diagnosis.

Keywords

maternal report; pediatric bipolar disorder

Although the level of certainty in the assessment of psychopathology in the field of child and adolescent mental health is highest when both mother and child endorse a clinical diagnosis, unfortunately, this agreement does not always occur in clinical practice. In such cases, clinicians face the dilemma of how to handle discrepant maternal and child reports. The reasons for these discrepancies are not well understood. It is possible that children and adults have different thresholds for considering certain symptoms clinically significant, which would account for the discrepant rates reported by parents and youth (1). Of greater concern is the possibility that incongruent reports given by youth and mothers are the result

Corresponding author: Joseph Biederman, M.D., Clinical and Research Program in Pediatric Psychopharmacology, Massachusetts General Hospital, 55 Fruit Street, Warren 705, Boston, MA 02114, USA, Fax: 617-724-1540, jrbiederman@partners.org.

CRP, AH, MCM, DK, and TM do not have any financial interests to disclose.

of false positives cases reported by youth or mother. This issue is particularly troubling in the assessment of bipolar disorder in the young, in light of the ongoing controversy surrounding this diagnosis.

Previous studies have provided insight into the meaning of discordant youth and parent reports of various disorders. For example, Braaten and colleagues (2) showed that youth self-reports of major depressive disorder in the absence of parental reports identified a mild form of depression associated with limited morbidity and disability. A study of concordance of attention-deficit hyperactivity disorder (ADHD) (3) indicated that maternal reports of ADHD were a meaningful diagnosis with high levels of impairment irrespective of the youth's report of ADHD.

The literature examining parental and youth reports in the diagnosis of bipolar disorder in youth is mixed. Tillman and colleagues (4) reported low levels of agreement between symptoms of mania reported by parents and children, and concluded that child reports were necessary for a comprehensive assessment of mania in the young. On the other hand, Kahana and colleagues (5) found that parental reports using the Child Behavior Checklist were better than youth self-reports at predicting a diagnosis of bipolar spectrum disorder.

One could argue that the severity of the symptomatic picture of mania leads to a spectrum of aberrant behaviors that make the disorder evident to the family and thus identifiable to the parent. Furthermore, considering that mania is commonly associated with poor judgment, it is not entirely surprising that some afflicted youth may have limited insight into their disorders, irrespective of external evidence to the contrary. As stated above, it is also possible that children have higher thresholds for considering certain symptoms clinically significant, which would account for the discrepancies between parent and youth reports (1).

Although discrepancies between child and mother reports could be bidirectional, since the mother is usually the initiator of the child's referral, the most common dilemma in clinical practice is what to do when the child report is negative while the maternal report endorses a diagnosis. In such cases it is important for the clinician to have a sense of how informative maternal reports are in the absence of corroborating endorsement by the youth. Such knowledge has important implications for the clinician in how to proceed in the course of treatment with a youth suspected of suffering from bipolar disorder based on maternal reports.

One approach to understanding this issue is to evaluate whether the clinical correlates of mania differ between concordant and discordant reports. If an informant provides a valid report of bipolar symptoms, then the resulting diagnosis should be associated with the serious clinical correlates characteristic of the disorder. Conversely, diagnoses based on spurious information should not demonstrate these associations. That is, if discordant reports are associated with the same clinical correlates and impairment, the diagnosis of mania should not be discounted. However, if the discordant cases are associated with higher functioning or have fewer clinical correlates compared to concordant cases, we can conclude that discordant reports may be false positives or represent a milder form of the disorder.

The main aim of this study was to evaluate the informativeness of maternal reports of mania in discordant cases, i.e., cases in which the diagnosis of mania is not corroborated by the youth. To this end, comparisons were made between discordant and concordant reports of mania in a large sample of youth with bipolar I disorder to examine whether they differed by informant source in severity, onset, duration, and treatment of mania, symptom profiles, comorbidities, intellectual functioning, and family psychopathology. Differences in family psychopathology were compared between the groups to determine whether mothers from discordant families were more likely to endorse psychopathology in other children compared

to concordant mothers or whether maternal psychopathology was associated with lack of concordance. In addition, we investigated the agreement of mother and child symptom reports and compared them to a previous study (4) to determine whether discordant reports may be due to differences in reports of specific symptoms. We hypothesized that concordant and discordant cases would not differ on these clinical features and correlates, supporting the validity of maternal diagnoses of mania when not corroborated by the youth.

Materials and methods

Subjects

Subjects were derived from two family genetic studies of pediatric bipolar disorder that used identical assessment methodology (6, 7). For this analysis, subjects between the ages of 12 and 19 years with both self-reported and mother-reported assessments were included, as well as their first-degree relatives. Parents and adult offspring provided written informed consent to participate, and parents also provided consent for offspring under the age of 18. Children and adolescents provided written assent to participate. The human research committee at Massachusetts General Hospital, Boston, MA, USA, approved this study.

As described in previous publications (6, 7), lifetime psychiatric assessments relied on the Schedule for Affective Disorder and Schizophrenia for School-Age Children–Epidemiologic version (K-SADS-E) (8) for subjects younger than 18 years of age and the Structured Clinical Interview for DSM-IV (9) (supplemented with modules from the K-SADS-E to assess childhood diagnoses) for subjects 18 years of age and older. Separate assessments were conducted with both the mother about the youth and directly with the youth. Separate raters for the child and mother were blind to the interview data from the other interview of the child-parent pair. Subjects reported impairment associated with each disorder on an ordinal scale, coded as mild, moderate, or severe.

All assessments were conducted by carefully selected, highly trained, and closely supervised interviewers who had undergraduate degrees in psychology. First, they underwent several weeks of classroom-style training, learning interview mechanics, diagnostic criteria, and coding algorithms. Then they observed interviews by experienced raters and clinicians. They subsequently conducted at least six practice (non-study) interviews and at least six study interviews while being observed by senior interviewers. Trainees were permitted to conduct interviews independently only after they executed at least three interviews that achieved perfect diagnostic agreement with an observing senior interviewer. We computed kappa coefficients of agreement between these raters and experienced, board-certified child and adult psychiatrists and licensed clinical psychologists. Based on 500 assessments, the median kappa coefficient was 0.98. Kappa coefficients for individual diagnoses included: mania (0.95), major depression (1.0), ADHD (0.88), conduct disorder (CD) (1.0), separation anxiety (1.0), agoraphobia (1.0), panic (0.95), and substance use disorder (1.0).

We considered a disorder positive if DSM-IV diagnostic criteria were unequivocally met. A committee of board-certified child and adult psychiatrists who were blind to the subject's bipolar status, referral source, and all other ascertainment data resolved diagnostic uncertainties. Diagnoses presented for review were considered positive only when the committee determined that diagnostic criteria were met to a clinically meaningful degree. Reviews of mother and youth interviews were conducted independently and each was blind to the interview data from the other interview of the child-parent pair. We estimated the reliability of the diagnostic review process by computing kappa coefficients of agreement for clinician reviewers. For these diagnoses, the median reliability between individual clinicians and the review committee assigned diagnoses was 0.87. Kappa coefficients for

individual diagnoses included: mania (0.78), major depression (1.0), ADHD (1.0), CD (1.0), separation anxiety (0.89), agoraphobia (0.80), panic (0.77), and substance use disorder (1.0).

For a diagnosis of mania to be considered positive, the child had to meet full DSM-IV criteria for a manic episode with associated impairment. Thus, a child must have met criterion A for a period (one week or longer) of extreme and persistently elevated, expansive, or irritable mood; plus criterion B, manifested by three (four if the mood is irritable only) of seven symptoms during the period of mood disturbance; plus criterion C, associated impairment. To meet criteria for a subthreshold diagnosis of mania, a child must have met criterion A for a period of four days or longer, have at least two (three if the mood is irritable only) of the seven criterion B symptoms, and associated impairment. The approach taken by the K-SADS to evaluate bipolar disorder criteria is similar to that taken by the original Schedule for Affective Disorder and Schizophrenia. First, a period of time characterized by the mood features in section A for euphoria or irritability is established. According to the K-SADS, we ask about irritability in the mania section in the following manner: Has there been a period of a week or longer when (child's name) felt super-angry, grouchy, cranky, or irritable all the time? So much so that (child's name) might be explosive or start fights with random people? Then, each of the criteria in B is addressed. For example, to assess B1 in the mania module, the interviewer would ask the mother: During this period did (child's name) feel especially self-confident? . . . like he/she could do anything? . . . was special? . . . in what way? . . . special powers? . . . stronger? . . . smarter? Interview questions asked to mothers and children were identical. During the interview, informants were also asked to classify the impairment associated with a given diagnosis (i.e., mild, moderate, or severe) as well as the type (i.e., counseling, pharmacotherapy, and/or hospitalization) and timing (i.e., ages of onset and offset) of any treatment for the diagnosis.

In addition to diagnostic information, interviewers assessed adaptive functioning by using the DSM-IV Global Assessment of Functioning Scale (GAF) (10), which yields a composite rating of a participant's global functioning on a scale ranging from 1 (worst) to 90 (best). GAF scores were assigned to each participant on the basis of information obtained in the diagnostic interview. These scores were also reviewed by the committee.

Diagnoses of mothers, fathers, and siblings 18 years of age and older were based on direct interviews with the subjects. Diagnoses of siblings less than 12 years of age were based on indirect interviews with the mothers. Siblings between 12 and 17 years of age had indirect and direct interviews and a diagnosis was considered positive if either of the interviewees endorsed the disorder.

Using the methods of Sattler (11), we estimated full-scale IQ from the vocabulary and block design subtests of the Wechsler Intelligence Scale for Children—Third Edition (12) for subjects younger than 18 years of age and the Wechsler Adult Intelligence Scales—Third Edition (13) for subjects 18 and 19 years of age. Our interviewers assessed academic achievement with the arithmetic and reading Subtests of the Wide Range Achievement Test—Third Edition (14). Since there are many anxiety disorders measured by our structured interviews, we aggregated them into a binary measure, coded positive if two or more anxiety disorders were endorsed, and negative otherwise (15). Socioeconomic status was measured using the five-point Hollingshead scale (16).

Statistical analysis

We compared severity, onset, duration, and treatment of mania, symptom profiles, comorbidities, intellectual functioning, and family psychopathology between two groups of youth: (i) those with both a mother report and self-report of mania ($n = 59$), and (ii) those with a mother report of mania and a negative self-report of mania ($n = 35$). Pearson's chi-

squared tests were used for binary outcomes, two-sample *t*-tests for continuous outcomes, and McNemar's chi-squared test for mother and child symptom reports in the concordant group. A Fisher's exact test or McNemar's exact test was used in the event that the distributional assumption of a chi-squared test was not met. To test rates of mood disorders in siblings, logistic regression with the Huber (17) correction was used to account for the non-independence associated with multiple siblings in some families. All tests were two-tailed with alpha set at 0.05.

Results

There were 98 mother-youth pairs available for analysis. Because only four subjects had a positive youth report and a negative mother report, they were excluded from this analysis. Thus, comparisons were made between subjects with concordance of maternal and youth diagnosis of mania (concordant group, $n = 59$) and subjects with a discordant diagnosis (discordant group, $n = 35$). Cases were defined as discordant when the diagnosis of mania was fully endorsed by the mother but the youth failed to endorse it even at a subthreshold level. Concordance was considered present when both the mother and the youth endorsed the diagnosis of mania at either the full or subthreshold level [positive criterion A (abnormal mood) with more than half of symptoms (criterion B) or more than half the duration required for a full diagnosis]. That is, the multiple symptoms of mania and associated functional impairment endorsed in subthreshold cases were considered to be clinically relevant, despite the failure to reach diagnostic criteria for full caseness. Thus, we considered subthreshold cases to be more closely related clinically to full cases than to non-cases. While the vast majority of the concordant cases had a full diagnosis of mania endorsed by both mother and child (78.0%), 18.6% had a full mother diagnosis and a subthreshold youth diagnosis, and 3.4% had a subthreshold mother diagnosis and a full youth diagnosis. There were no significant differences between the concordant and discordant groups in child age, child sex, socioeconomic status, or intactness of the family (Table 1).

Characteristics of mania

Age of onset, duration, and the percentage of subjects with severe impairment of mania did not differ between the two groups (Table 1). Although the overall functioning as measured by the GAF was very impaired in both groups, it was worse in the concordant group. There were no meaningful differences between concordant and discordant cases in rates of psychiatric hospitalizations or pharmacotherapy for mania (Table 1).

Cognitive and school functioning

There were no significant differences between the groups on the cognitive variables examined (Table 1). The discordant group had significantly higher rates of the youth being placed in a special class (68.6% versus 45.8%, $\chi^2_{(1)} = 4.60$, $p = 0.03$) and need for extra help (88.6% versus 64.4%, $\chi^2_{(1)} = 6.57$, $p = 0.01$) compared to the concordant group.

Symptom profiles of mania and depression

As shown in Figure 1, there were no significant differences between concordant and discordant cases in maternal reports of individual symptoms of mania or depression.

To gain further insight about the nature of maternal and youth agreement at the symptom level, we compared maternal and youth reports within the concordant group. This analysis showed that with one exception, mothers and youth reported similar symptoms of mania (all $p > 0.05$). The exception was that mothers reported a relatively higher number of irritable mood symptoms than the youth themselves (84.7% versus 64.4%, McNemar's exact test, $p =$

0.004). Within the concordant group, age at interview was not associated with any of the symptoms being endorsed by the youth (all $p > 0.10$).

To gain additional insight about the comparability of our findings with other investigators examining this issue, we analyzed the rates of agreement between mothers and youth reports observed in our study and those reported by Tillman et al. (4) from Barbara Geller's group. As shown in Figure 2, this analysis showed more similarities than differences in the rates of agreements between our study and those of Geller's group. Our results showed significantly more agreement for elated mood and grandiosity than those observed by Tillman et al. (4), while Tillman et al. (4) noted significantly more agreement for irritable mood and accelerated/pressured speech.

Patterns of psychiatric comorbidity in probands

The concordant group had relatively higher rates of severely impairing major depressive disorder, psychoactive substance use disorder (any alcohol or drug abuse or dependence), and conduct disorder compared to the discordant group, while the discordant group had a higher rate of ADHD (Fig. 3). There were no additional differences between the groups on rates of other disorders.

Psychiatric disorders in relatives

To examine whether the presence of mood disorders in mothers and siblings was associated with the concordance of maternal and child reports, we examined rates of major depression and bipolar disorder in mothers, fathers, and siblings by informant status. As shown in Figure 4, this analysis showed that there were no meaningful differences between concordant and discordant cases in rates of major depressive disorder and bipolar disorder in first-degree relatives. Furthermore, there were no differences between first-degree relatives in the rates of any other disorders examined (Fig. 4). Finally, the groups did not differ on the percentage of the child's life exposed to a maternal mood disorder (concordant = 22.7%, discordant = 19.2%, $t_{(92)} = -0.42$, $p = 0.67$) or a paternal mood disorder (concordant = 7.9%, discordant = 10.8%, $t_{(80)} = 0.47$, $p = 0.64$).

Discussion

This study evaluated the concordance of maternal and youth self reports on the diagnosis of mania. With very few exceptions, there were no meaningful differences on a wide range of personal and familial clinical correlates between discordant and concordant cases. Even in the absence of endorsement by youth, maternal reports of mania identified a markedly severe clinical picture of mania that was largely indistinguishable from that of concordant cases. These results suggest that clinicians should not dismiss out of hand a putative diagnosis of bipolar disorder when endorsed only by the referring parent and not corroborated by the youth.

Our results of 36% discordance in the diagnosis of mania between maternal and youth self-reports are consistent with the study by Tillman and colleagues (4), which reported that 38% of their diagnosed cases of bipolar disorder relied on parent-only diagnoses without endorsement by youth. While our group showed higher rates of agreement for elated mood and grandiosity compared to Tillman and colleagues (4), the ranges of agreement for all symptoms were similar (54.8%–82.2% and 41.9%–91.4%, respectively). Taken together, these findings suggest that discordance between youth and mothers on the overall diagnosis of mania is not attributable to a consistent pattern of disagreement between reporters for any one symptom in particular.

The absence of differences between the concordant and discordant cases in rates of maternal or paternal unipolar and bipolar mood disorders or exposure to maternal psychopathology do not support the commonly held belief that mothers affected with mood disorders are more likely to report similar disorders in their offspring. The findings also suggest that the children of mothers with mood disorders are as likely to report mood symptoms as those whose mothers are not ill.

Although our results indicate that maternal reporting of youth bipolar disorder identifies a serious disorder that requires close clinical attention, even in the absence of corroboration by the youth, this does not mean that reporting of mania by youth should not be taken seriously. Rather, they indicate that maternal reports are informative and may need to be given credence even in the face of discrepancies with the youth self-report.

The reasons why some youth with bipolar disorder fail to endorse the diagnosis of mania despite marked morbidity and disability remain unclear. This may be due in part to the poor judgment associated with bipolar disorder that could lead to limited insight and poor reporting abilities in some affected youth. Another possibility could be the higher comorbidity with ADHD in youth who were discordant, as ADHD may adversely impact their ability to notice their symptoms of mania, self-reflect, and accurately report on them. Some earlier studies have suggested that adolescents with ADHD are poor informants of their ADHD symptoms (3, 18), and perhaps this comorbidity adversely impacts the ability of such youth to self-report on their symptoms of mania as well. More work is needed to shed further light on this critical issue.

Our results also have implications for population estimates of bipolar disorder in the community. For example, Lewinsohn and colleagues (19) reported a 1% prevalence of bipolar disorder in adolescents, but reliance on only youth reports in this community sample suggests that this rate is an underestimate. Maternal reports are needed to calculate an accurate prevalence in the general population.

The findings reported here should be viewed in light of some methodological limitations. Because nearly all of the youth were Caucasian, the present results may not generalize to other populations. Because the sample was referred, results may not generalize to community samples. The adolescent age range of the participants also limits the generalizability of this study. It is possible that quite different results may be found with a younger sample. Most of the evidence for the high morbidity in the discordant cases came from information provided by the mother, including severity of manic episodes, their treatment, and psychiatric comorbidity. Future studies may benefit from external sources of information to establish the validity of a mother's report of mania in the absence of a youth endorsement. Our study was cross-sectional. Longitudinal data may provide additional evidence about the agreement between parent and child reports. Assessments made at multiple time points may provide more reliable patterns of agreement between self- and parent-reported symptomatology that would not be biased by transient factors such as day-to-day conflicts between parents and adolescents or other environmental influences. Since most of our conclusions are based on null findings, they may be subject to Type II error. Additional research should be done to confirm these findings.

Despite these considerations, our results indicate that even in the absence of endorsement by the youth, when the mother endorses a diagnosis of bipolar disorder in youth, it identifies a highly morbid condition with clinical correlates that are largely indistinguishable from those observed in concordant reports. Further work is needed to better understand the causes for the differences in the reporting of mania in some youth and their mothers. Future work

should also investigate the possibility that parents who endorse a diagnosis of bipolar disorder in youth that is not corroborated by the youth are unreliable or biased reporters.

Acknowledgments

JB receives or has received research support from, is or has been a speaker for, or is or has been on the advisory board for Shire, Eli Lilly & Co., Pfizer, McNeil, Abbott, Bristol-Myers Squibb, New River Pharmaceuticals, Cephalon, Janssen, Novartis, UCB Pharma, AstraZeneca, Forest Laboratories, GlaxoSmithKline, Neurosearch, Stanley Medical Institute, Inc., Lilly Foundation, Prechter Foundation, NIMH, NICHD, and NIDA. TEW receives grant support from, is a speaker for, or is a consultant for Abbott, McNeil, Eli Lilly & Co., NIDA, Merck, Shire, Novartis, and Cephalon. TS receives or has received research support from, is or has been a speaker for, or is or has been on the advisory board for Shire Laboratories, Inc., Eli Lilly & Co., GlaxoSmithKline, Pfizer, McNeil, Wyeth Ayerst, Novartis, and NIMH. SVF receives or has received research support from, is or has been a speaker for, or is or has been on the advisory board for Eli Lilly & Co., McNeil Consumer & Specialty Pharmaceuticals, Shire US, Inc., Noven Pharmaceuticals, Cephalon, NIMH, NICHD, and NINDS. EM receives or has received grant support from McNeil Pediatrics and Janssen. JW receives or has received research support from, is or has been a speaker for, or is or has been on the advisory board for Pfizer, Shire, Eli Lilly & Co., NIMH, and Janssen.

This study was supported by National Institute of Mental Health grant R01MH066237 (JW) and National Institute on Drug Abuse grant R01DA12945 (TEW).

References

1. Cantwell D, Lewinsohn P, Rohde P, Seeley J. Correspondence between adolescent report and parent report of psychiatric diagnostic data. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1997; 36:610–619. [PubMed: 9136495]
2. Braaten E, Biederman J, DiMauro A, et al. Methodological complexities in the diagnosis of major depression in youth: An analysis of mother and youth self reports. *Journal of Child and Adolescent Psychopharmacology*. 2001; 11:395–407. [PubMed: 11838822]
3. Biederman J, Williamson S, Mick E, et al. Informativeness of Maternal Reports on the Diagnosis of ADHD An Analysis of Mother and Youth Reports. *Journal of Attention Disorders*. 2007; 10:410–417. [PubMed: 17449840]
4. Tillman R, Geller B, Craney JL, Bolhofner K, Williams M, Zimmerman B. Relationship of parent and child informants to prevalence of mania symptoms in children with a prepubertal and early adolescent bipolar disorder phenotype. *American Journal of Psychiatry*. 2004; 161:1278–1284. [PubMed: 15229062]
5. Kahana SY, Youngstrom E, Findling RL, Calabrese J. Employing parent, teacher, and youth self-report checklists in identifying pediatric bipolar spectrum disorders: An examination of diagnostic accuracy and clinical utility. *Journal of Child and Adolescent Psychopharmacology*. 2003; 13:471–488. [PubMed: 14977460]
6. Wozniak J, Biederman J, Kwon A, et al. How cardinal are cardinal symptoms in pediatric bipolar disorder?: An examination of clinical correlates. *Biological Psychiatry*. 2005; 58:583–588. [PubMed: 16197929]
7. Wilens T, Biederman J, Adamson JJ, et al. Association of bipolar and substance use disorders in parents of adolescents with bipolar disorder. *Biological Psychiatry*. 2007; 62:129–134. [PubMed: 17481590]
8. Orvaschel, H. Schedule for Affective Disorder and Schizophrenia for School-Age Children Epidemiologic Version. 5th Edition ed. Ft. Lauderdale: Nova Southeastern University Center for Psychological Studies; 1994.
9. First, M.; Spitzer, R.; Gibbon, M.; Williams, J. Structured Clinical Interview for DSM-IV Axis I Disorders. Washington DC: American Psychiatric Press; 1997.
10. American Psychiatric Association. DSM-IV Sourcebook. Vol. Vol. 1. Washington, DC: American Psychiatric Association; 1994.
11. Sattler, J. Psychological Assessment. Fourth ed. New York: McGraw-Hill; 1988.
12. Wechsler, D. Manual for the Wechsler Intelligence Scale for Children. Third Edition. San Antonio: The Psychological Corporation, Harcourt Brace Jovanovich, Inc.; 1991.

13. Wechsler, D. Wechsler Adult Intelligence Scale III (manual). 3rd ed. San Antonio, TX: The Psychological Corporation; 1997.
14. Jastak, J.; Jastak, S. Wide Range Achievement Test-Third Edition. Wilmington, DE: Jastak Associates; 1993.
15. Mennin D, Biederman J, Mick E, Faraone SV. Towards defining a meaningful anxiety phenotype for research in ADHD children. *Journal of Attention Disorders*. 2000; 3:192–199.
16. Hollingshead, AB. Four Factor Index of Social Status. New Haven: Yale University Press; 1975.
17. Huber PJ. The behavior of maximum likelihood estimates under non-standard conditions. *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability*. 1967; 1:221–233.
18. Smith BH, Pelham WE Jr, Gnagy E, Molina B, Evans S. The reliability, validity, and unique contributions of self-report by adolescents receiving treatment for attention-deficit/hyperactivity disorder. *J Consult Clin Psychol*. 2000; 68:489–499. [PubMed: 10883565]
19. Lewinsohn PM, Klein DN, Seeley JR. Bipolar disorder during adolescence and young adulthood in a community sample. *Bipolar Disord*. 2000; 2:281–293. [PubMed: 11249806]

A. Mania symptoms **B. Depression symptoms** **Figure 1.**

Maternal reports of mood symptoms in concordant and discordant cases.

A. All $p > 0.05$.B. All $p > 0.05$.

Figure 2.
Percent agreement of maternal and youth reports in symptoms of mania in this study and in Tillman et al. (4).

Figure 3.

Rates of psychiatric comorbidity.

MDD = major depressive disorder; SUD = substance use disorder; ADHD = attention-deficit hyperactivity disorder; ODD = oppositional defiant disorder; CD = conduct disorder.

A. Mothers **B. Fathers** **C. Siblings** **Figure 4.**

Rates of parental and sibling psychopathology in youth with mania.

A. No significant differences (all $p > 0.10$).

B. No significant differences (all $p > 0.05$).

C. No significant differences (all $p > 0.05$).

MDD = major depressive disorder; SUD = substance use disorder; ADHD = attention-deficit hyperactivity disorder; ODD = oppositional defiant disorder; CD = conduct disorder.

Table 1Demographics, characteristics of mania, and cognition represented by mean $\pm$ standard deviation or n (%)

	Concordant (n = 59)	Parent only (n = 35)	Test statistic	p value
Demographics				
Age (years)	14.9 $\pm$ 1.9	14.2 $\pm$ 1.5	$t_{(92)} = -1.87$	0.06
Gender (male)	36 (61)	26 (74)	$\chi^2_{(1)} = 1.72$	0.19
Ethnicity (Caucasian)	56 (95)	33 (94)	$\chi^2_{(1)} = 0.02$	0.90
Socioeconomic status	1.8 $\pm$ 0.9	1.8 $\pm$ 1.2	$z = -0.09$	0.93
Intact family	38 (64)	22 (63)	$\chi^2_{(1)} = 0.02$	0.88
Characteristics of mania				
Age of onset	8.9 $\pm$ 4.3	7.4 $\pm$ 3.9	$t_{(92)} = -1.72$	0.09
Duration (years)	3.9 $\pm$ 4.2	4.9 $\pm$ 3.9	$t_{(90)} = -1.06$	0.29
Hospitalized for mania	34 (58)	13 (37)	$\chi^2_{(1)} = 3.69$	0.055
Pharmacotherapy for mania	58 (98)	33 (94)	$\chi^2_{(1)} = 1.15$	0.28
Severe impairment	50 (85)	24 (69)	$\chi^2_{(1)} = 3.43$	0.06
Global Assessment of Functioning	36.3 $\pm$ 4.7	40.1 $\pm$ 5.5	$t_{(92)} = 3.47$	< 0.001
IQ and achievement				
Full scale IQ	101.3 $\pm$ 11.4	98.5 $\pm$ 13.7	$t_{(81)} = -1.01$	0.32
Block design IQ	98.8 $\pm$ 14.7	99.1 $\pm$ 17.8	$t_{(81)} = 0.08$	0.94
Vocabulary IQ	103.6 $\pm$ 12.5	98.5 $\pm$ 14.0	$t_{(81)} = -1.71$	0.09
WRAT arithmetic	94.1 $\pm$ 14.6	90.9 $\pm$ 13.8	$t_{(78)} = -0.97$	0.33
WRAT reading	105.5 $\pm$ 11.6	100.2 $\pm$ 12.5	$t_{(81)} = -1.93$	0.06

WRAT = Wide Range Achievement Test.