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The Effects of Parental Mood on Reports of Their Children's Psychopathology

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Abstract

Objective—In this study, we aim to assess whether current mood state (depressed or manic/hypomanic) among parents with a mood disorder affects their reports of their offspring's psychopathology.

Method—Sixty-five parents with current depression, 42 with current mania/hypomania, 181 with mood disorder in remission, and their offspring (n=479, ages 6-18) completed assessments of offspring IP psychopathology as part of the Pittsburgh Bipolar Offspring Study (BIOS). We compared rates of offspring psychopathology assessed using the following: a clinician-administered semi-structured interview with parent and child using the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS); parent-reported Child Behavior Checklist (CBCL); offspring self-reported Youth Self Reports (YSR) for those 11 years and older (n=250); and teachers' reports when available (n= 209).

Results—There were no between-group differences in rates of psychopathology yielded from the K-SADS, except for more depressive disorders in offspring of parents with current mania/hypomania compared to offspring of parents in remission. Conversely, using the CBCL and comparing with parents who were in remission, parents with current depression reported significantly more externalizing psychopathology in offspring, whereas parents with current mania/hypomania reported more externalizing and internalizing psychopathology in their offspring. On the YSR, offspring of parents with current mania/hypomania had more internalizing psychopathology compared to offspring of parents in remission. Teacher's reports showed no between-group differences in rates of any psychopathology.

Conclusion—Parental active mood symptomatology, especially during a manic/hypomanic episode, significantly affects their reports of their offspring's psychopathology. Trained interviewers reduce potential report bias. Clinicians and studies assessing children's psychopathology should take into account parental current mood state.

Keywords

bipolar disorder; depression; high risk; offspring

Introduction

Studies consistently show that offspring of parents with mood disorders are at higher risk for developing mood, anxiety, and externalizing disorders when compared to offspring of control parents¹⁻³. As expected, parent report serves as the primary source of information in most studies assessing children's psychopathology. However, many of these parents have mood and other psychiatric disorders that might affect their ability to objectively report on their offspring's psychopathology. In a key review of the literature regarding the "depression-distortion hypothesis", Richters concluded that there was no substantial evidence of bias associated with parental depression⁴. However, subsequent studies showed mixed results: some support Richters' assertion that parental depression does not significantly influence reports, others report that parents with depression minimally to moderately over-report behavioral problems in their offspring⁵⁻¹⁶, while others suggest that parents with depression report psychopathology in their offspring more accurately than healthy parents^{17,18} (see Table 1).

The above-noted discrepancies may be accounted for by methodological issues such as assessment of parents' psychopathology using self-reports and not clinical interviews^{9,12,15,19-21}, small samples, evaluators not blind to parental psychiatric status, lack of direct assessment with the child or only via self-report, and no collateral information (e.g., teacher reports)^{5,6,8-11,13,14,16,18}. Furthermore, extant studies evaluated the effects of depression among samples of parents with unipolar major depression^{5,9,13-15,20,21} and unipolar and bipolar depression^{17,22}, but no study has examined the effects of parental mania/hypomania. Finally, no study differentiates between the effects of parental past versus current mood disorders on the prevalence of their children's psychopathology.

We thus aimed to further investigate the "parental-bias" hypothesis addressing limitations of prior studies. Data were collected as part of the ongoing Pittsburgh Bipolar Offspring Study (BIOS), designed to assess psychopathology in offspring of parents with bipolar disorder (BP) and control parents². BIOS is a large sample of parents with BP or major depressive disorder (MDD)/dysthymia who were assessed for current and lifetime psychopathology using standardized assessments. Trained evaluators blind to parental diagnosis assessed for categorical and dimensional psychopathology in offspring via direct interview with parents and children; parents and children also completed self-assessments, and teacher reports were available in a subgroup of youth. The BIOS sample also enabled us to test for a difference between reports of parents with current vs. remitted mood episodes, and, for the first time in the literature, the effects of parental manic/hypomanic/mixed (for simplicity referred to as manic/hypomanic) vs. depressive episodes.

We hypothesized that We after adjusting for confounding factors, offspring whose parents were in a mood episode at the time of assessment would show higher rates of categorical and dimensional psychopathology and poorer functioning compared to offspring of parents whose mood disorder was in remission. In addition, parents who were in a current mood episode would report more psychopathology in their offspring compared to parents with remitted mood disorder. For the subgroup of offspring with teachers' reports, we expected the discrepancy between parents' and teachers' reports would be more prominent in

offspring of parents in a current mood episode compared to offspring whose parents were remitted.

Method

Participants

The methodology of BIOS has been described in detail elsewhere ². Briefly, the original sample included 388 offspring of 231 parents who fulfilled *DSM-IV* ²³ criteria for BP-I (n=157) or BP-II (n=74), and 251 offspring of 143 demographically matched community control parents (65 healthy and 78 with non-BP psychopathology). For this paper, 288 parents with current or lifetime mood disorders were included (all 231 parents with BP and 57 of the 143 control parents who had unipolar affective disorder). Healthy parents and parents with non-affective psychopathology were excluded from the current study. Parents with BP were recruited through advertisement (53%), adult BP research studies (31%), and adult outpatient clinics (16%). Control parents for the original study (healthy parents or parents with non-BP psychopathology) were ascertained by random-digit dialing and were group-matched for age, sex, and neighborhood to the parents with BP. Exclusion criteria for parents were current or lifetime diagnoses of schizophrenia, mental retardation, and mood disorders secondary to substance abuse, medical conditions, or medications. Except for children with a condition that impeded their participation in the study (e.g., intellectual disability), all offspring ages 6-18 from each family were included. The offspring sample consisted of 479 children including 109 of parents with depression, 64 of parents in a manic/hypomanic episode, and 306 of parents in remission from either unipolar or bipolar depression.

Procedures

This study was approved by the University of Pittsburgh Institutional Review Board. Informed consent was obtained from all participants.

Parents—Parents were evaluated for past and current (up to one month preceding the interview) *DSM-IV* disorders using the Structured Clinical Interview (SCID) ²⁴. First- and second-degree relatives' psychiatric history was ascertained using the Family History—Research Diagnostic Criteria method (FH-RDC) ²⁵. Attention-deficit/hyperactivity (ADHD), disruptive behavior (DBD), and separation anxiety disorders (SAD) were ascertained using the respective items from the Schedule for Affective Disorders and Schizophrenia for School-Age Children, Present and Lifetime Version (K-SADS-PL) ²⁶; SCID kappas were 0.8. The parent's current and past level of functioning was assessed using the Global Assessment of Functioning scale (GAF) ²⁷. Socioeconomic status (SES) was ascertained using the Hollingshead scale ²⁸. Severity of depressive and manic symptoms was evaluated using the Beck Depression Inventory (BDI) ²⁹ and the Affective Lability Scale (ALS), respectively. ³⁰

Offspring—Parents (about their children) and children were directly interviewed for past and current *DSM* disorders using the K-SADS-PL by trained bachelors- or master's-level interviewers. Interviewers of the offspring were blind to parental diagnoses. Results of the

interview were presented to child psychiatrists for diagnostic consensus. The K-SADS-PL includes separate parental and offspring ratings as well as a summary score, which is a synthesis of parent and child ratings, information from other sources (e.g., medical records), and the clinical judgment of a child psychiatrist and interviewer. *DSM-IV* diagnoses were made using the summary scores, but individual K-SADS symptoms were analyzed separately for parents and children. Operationalized criteria for BP not-otherwise-specified (NOS) were applied². Kappas for all disorders ranged from 0.80-0.90.

Offspring dimensional psychopathology that occurred six months prior to the assessment was evaluated using the Child Behavior Checklist (CBCL/4-18)³¹; offspring older than 11 completed the Youth Self Report (YSR)³¹. These instruments yield Total, Internalizing, and Externalizing scores, and eight subscales (Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Social Problems, Thought Problems, Rule-Breaking Behavior, Aggressive Behavior, and Attention Problems). Offspring functioning was rated using the Children's Global Assessment Scale (CGAS)³². Collateral information was obtained using the Teacher-Report Form (TRF)³¹, which contains the same subscales as the CBCL and YSR.

Data Analyses

Demographic and clinical comparisons were performed using t, chi-square, and Fisher's exact tests as appropriate. Raw and T-scores were used to compare the CBCL, YSR, and TRF scores.³³ T-score 70 was used as the cutoff for clinically significant psychopathology. Analysis of variance (ANOVA) was used to compare the CBCL, YSR, and TRF mean raw scores. Since more than one offspring of some parents were included in the study, mixed models were used to control the random effect of families. We used Pearson correlation coefficient to determine correlations between BDI, ALS, and CBCL scores. All tests were two-sided with significance set at 0.05. All pairwise comparisons were adjusted for multiple comparisons using Bonferroni corrections. Corrections using False Discovery Rate (FDR) yielded similar results to those using Bonferroni.

Results

Parents

One-hundred seven parents were in a current mood state (65: depressive episode; 42: manic/hypomanic episode) and 181 were in remission (BP: 124; MDD/Dysthymia: 57). As depicted in Table 2, there were no between-group demographic differences. All parents with current depression had BP and had significantly lower functioning, higher BDI and ALS scores, and more comorbid substance use disorders (SUD), specific phobias, obsessive-compulsive disorder (OCD), and generalized anxiety disorder (GAD) compared to parents in remission (all *p*-values .03). There was no significant between-group difference in mean number of prior mood episodes. All parents with current mania/hypomania by definition had BP. Also they showed lower functioning, higher BDI and ALS scores, and more SUD, any anxiety disorders, specific phobia, OCD, and GAD compared to parents in remission (all *p*-values .01). Parents with current mania/hypomania also showed higher ALS scores and more lifetime anxiety disorder compared to parents with current depression (*p*-values .02).

Offspring

With the exception of more white participants among the offspring of parents with current mania/hypomania (OPM) when compared with the offspring of parents with current depression (OPD) and the offspring of parents in remission (OPR), there were no other between-group demographic differences (Table 3). OPM had lower current and highest past CGAS scores compared to OPR (p -values=.02).

Psychopathology ascertained through the KSADS-PL—For the entire sample, any axis-I disorders were present in 286 (59.7%) offspring. Except for significantly more depressive disorders in OPM compared to OPR (39.1% and 22.5%, respectively), there were no other significant between-group differences in rates of psychopathology.

For each of the K-SADS symptoms, we analyzed the number of cases in which a specific symptom was reported by the parent but not the offspring (“parent-reporting”), and by the offspring but not the parent (“child-reporting”). There were no between-group differences in parent- or child-reporting except in higher rates of parent-reporting of unrealistic worries in the OPD and OPM compared to OPR (p -values .03; see Supplementary Tables S1a and S1b, available online). To examine for possible age effect regarding parent- or child-reporting, we compared parental and offspring reports for offspring aged 6-12 and 12-18 and found no differences. **CBCL (Table 4).** The CBCL was available for 441 offspring (92%). There were no differences in CBCL completion rates among the three groups of parents. There were no significant differences between CBCL scores given by fathers or mothers. ANOVA showed significant main group effects for all CBCL subscales except the Withdrawn/Depressed and the Thought Problems subscales (all p -values .04). Pairwise analyses showed that compared to OPR, OPD had significantly higher scores in the CBCL Total problem and Externalizing, Attention, Rule-Breaking and Aggressive Behavior subscales (p -values .03). OPM had higher scores compared to OPR in all CBCL subscales, except the Withdrawn/Depressed and Thought Problems subscales (p -values<.01). There were no significant differences in CBCL scores between OPD and OPM. Adjusting the pairwise analyses for multiple comparisons did not change the results.

Compared to OPR, OPD had significantly higher percentages of Total, Externalizing, Rule-Breaking, and Aggressive Behavior subscales (CBCL T-score ≥ 70 ; all p -values .04). OPM had significantly higher percentage of Total, Internalizing, Anxious/Depressed, Somatic, Thought Problems, and Rule-Breaking subscales (CBCL T-scores ≥ 70) compared to OPR (all p -values .04, data not shown). There were no significant differences in rates of T-score ≥ 70 in any subscales between OPD and OPM.

Within the group of parents with a current depressive episode, there were no significant correlations between the BDI and CBCL total scores and in none of the subscales. Also, within the group of parents who were in current mania/hypomania, there were no significant correlations between ALS and CBCL scores (data not shown).

YSR (Table 5)—The YSR was available for 250 offspring (65.8% of the offspring aged 11 and older). There were no differences in completion rates between OPR and OPD/OPM. ANOVA showed significant main group effects for YSR Total and Internalizing, Anxious/

Depressed, Withdrawn/Depressed and Somatic subscales. Pairwise analysis showed that OPD had significantly higher scores in YSR Withdrawn/Depressed and Rule-Breaking subscales compared to OPR. OPM had higher scores in the Total, Internalizing, Anxious/Depressed, Withdrawn/Depressed, and Social Problems subscales compared to OPR (p -values $\leq .05$). Also, OPM showed higher scores in the Anxious/Depressed subscale when compared to OPD. Adjusting the pairwise analyses for multiple comparisons did not change the results. OPM showed significantly higher scores in the Internalizing, Anxious/Depressed and Withdrawn/Depressed subscales compared to OPR. OPM had significantly more YSR T-score ≥ 70 in the Internalizing, Anxious/Depressed and Withdrawn/Depressed subscales compared to OPR (data not shown). The correlations between YSR and CBCL scores for corresponding subscales ranged from 0.47 to 0.63 (all p -values $< .001$). There were no significant between-group differences in correlations between YSR and TRF scores or YSR and CBCL scores.

TRF (see Supplementary Table S2, available online)—Teacher reports were available for 209 (43.6%) offspring. OPD had significantly less TRF completed compared to OPR (32.1% and 49.0%, respectively, $\chi^2=9.30$, $p=.002$). There were no significant demographic or clinical differences between offspring who had a TRF and those who did not, except higher rates of SUD in offspring without a TRF (6.7% and 2.5%, respectively, $\chi^2=4.09$, $p=.04$). There were no significant between-group differences in any of the TRF raw scores or rates of TRF T-score ≥ 70 in any subscales. The correlation between TRF and CBCL scores ranged between 0.21-0.41 for Total, Internalizing, and Externalizing subscales. The correlation between YSR Total, Internalizing, Externalizing subscales and TRF corresponding subscales scores ranged between 0.19-0.35 (all p -values $< .05$). There were no significant differences among the three groups in correlations between the TRF and the CBCL scores. Adjusting the pairwise analyses for multiple comparisons did not change the results.

Discussion

In this study, when an offspring's psychopathology was ascertained by clinician interview (K-SADS), there were few differences between offspring of parents who were in current depression or mania/hypomania episodes at the time of completing the interview and offspring of parents who were in remission. In contrast, using the parent-reported CBCL, offspring of parents who were in a mood episode at the time of completing the questionnaire (OPM and OPD) were reported by their parents to have significantly more psychopathology compared to OPR, particularly externalizing symptomatology, even after taking into account confounding factors and correction for multiple comparisons. Further analysis showed that compared to OPR, OPD had higher rates of CBCL T-scores ≥ 2 SD above the norm for the Total and the Externalizing subscales, whereas OPM had higher rates of CBCL T-scores ≥ 2 SD above the norm for the Total and most of the subscales. YSR scores did not differ between OPR and OPD. OPM had higher YSR raw scores and higher rates of YSR T-scores ≥ 2 SD above the norm in the Internalizing, Anxious/Depressed, and Withdrawn/Depressed subscales compared to OPR. There were no significant between-group differences in TRF scores in any of the subscales. Overall, the correlations between parental,

teachers' and youth reports were low to moderate, with no differences between groups. Reanalyzing the data excluding parents with unipolar depression from all analyses yielded similar results.

Before discussing in more detail the above results, the following limitations should be addressed. First, both groups of symptomatic parents included only parents with BP, while the group of parents in remission included also parents with MDD/dysthymia. Thus, we could not compare ratings for offspring of parents with current unipolar vs. bipolar depression. Second, as all studies using the K-SADS, the final *DSM-IV* diagnoses were based on summary scores. However, with the exception of unrealistic worries, there were no significant differences in parental and offspring's reports for each specific symptom ascertained through the K-SADS. Finally, results are cross-sectional.

Using direct interviews there were almost no differences in rates of psychiatric disorders between offspring of symptomatic parents and parents in remission. In contrast, the CBCL scores of offspring of parents in a current affective episode were significantly higher most to Similar in subscales compared OPR. Similar to previous studies that suggested that parents with depression report more externalizing psychopathology in their offspring (compared to teachers'/youth reports)^{5,9,11,16,17}, we also found that parents with current depression attribute more behavioral symptoms to their offspring compared to parents in remission. Perhaps parents with acute depression are less tolerant of their children's externalizing behaviors⁸. However, we cannot rule out a possibility that OPD actually had more externalizing symptoms. In contrast to the increased externalizing psychopathology, parents with current depression did not report more internalizing symptoms in their offspring. Interestingly, previous studies found that as compared with healthy women, women with a history of depression report more internalizing behaviors in their offspring.^{9,13} It is possible therefore that parents with depression are more sensitive to detecting internalizing symptoms in their offspring during periods of affective symptom remission.

Since OPM had higher rates of depressive disorders compared to OPR, it was expected that they would also have higher scores in the corresponding CBCL and YSR subscales (i.e., Internalizing, Anxious/Depressed, and Withdrawn/Depressed subscales). However, OPM also had higher CBCL scores in the Externalizing, Somatic, Social Problems and Attention subscales. Hence, the reporting of parents in a current manic/hypomanic state spanned a wider range of behavior and psychopathology compared to the reporting of parents with current depression. The increased reporting of psychopathology by manic/hypomanic parents may also be related to the higher rate of comorbid anxiety, which was also found to increase reporting of offspring psychopathology by parents.^{6,9}

The accordance between psychopathology found by the interviewers using the K-SADS and the YSR, along with the fact that teachers' reports showed no differences in rates of psychopathology between OPM, OPD and OPR, suggests that the higher rates of psychopathology described by parental reports may have resulted from a subjective parental bias. In contrast to parental reports using the CBCL, in the K-SADS there were almost no between-group differences in parental report of specific symptoms, meaning that an experienced interviewer is probably less biased by parental mood state while integrating

information given by the parent and the child. As opposed to previous studies that found correlations between parental self-reported depressive symptoms and the degree of reporting of psychopathology in the offspring^{6,8,11,19}, we found no significant correlation between levels of parental self-reported current depressive or manic symptoms and reporting of psychopathology in their offspring. Thus, it was impossible to infer from parental level of self-reported affective symptoms and the magnitude of a possible inflation in their reports.

Rates of offspring's psychiatric disorders found by interviewers in our study are similar to rates reported in previous studies of offspring of parents with current or lifetime history of MDD or BP^{1,2,33-37}. Nevertheless, the absence of difference in rates of psychiatric disorders between OPD and OPR was surprising considering the literature that shows that improvement in maternal depressive symptoms is associated with a reduction in rates of psychopathology in their children^{3,38,39}. However, it is possible that the rates of psychopathology in OPR were higher before the parental affective episode remitted. The higher rates of depressive disorders found in our study in OPM can be explained, at least in part, by the excessive rate of anxiety and SUDs of their parents⁴⁰. Unfortunately, we could not compare our results with other studies because no other study to date has examined reports given by parents with manic/hypomanic symptoms and parents with BP in remission.

In conclusion, parental mood state significantly affects questionnaire reports regarding their offsprings' psychopathology and behavioral symptoms. Moreover, reports given by parents in a manic/hypomanic state are particularly biased. Findings indicate that experienced interviewers reduce such potential report bias. Thus, current parental mood state, and especially manic/hypomanic state, might influence the outcome measures of clinical studies and inflate rates of psychopathology ascertained by parental reports. Clinicians assessing psychopathology reporting in offspring of parents with mood disorders should be aware of this potential bias. In addition, studies evaluating children's psychopathology and the effect that treatment of parental mood disorders has on their offspring's psychopathology should take into account the possibility that at least part of an apparent improvement in the child's psychopathology might be accounted for by a decrease in parental reporting bias. Future studies regarding categorical and dimensional psychopathology in offspring of parents with mood disorders should address the effect that current mood state (depressed or manic/hypomanic) has on parental reports.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Main Findings of Recent Studies Assessing Influence of Parental Mood State on Ratings of Offspring's Psychopathology

Study	Sample Size (children)	Age (years)	Parental assessment	Offspring assessment	Main findings
Fergusson et al. (1993) ¹⁶	768	12-13	Levine-Pilowsky Depression Inventory	Questionnaires (Rutter and Conners parents questionnaires), children's reports regarding DSM-III ADHD and ODD	Small to moderate correlations between maternal depression and maternal over-reporting of child behavior problems.
Kinard et al. (1995) ¹⁸	327	6-12	CES-D	CBCL, TRF	No significant difference in correlations between parental and teachers' reports between mothers with and without depression.
Tarullo et al. (1995) ¹⁷	186	8-16	SADS	DICA-R	Greater parent-child agreement in families with an affectively ill mother and well father than in families with both parents healthy.
Briggs-Gowan et al. (1996) ²¹	188	9-12	CES-D, HOS	DISC-R	Maternal affective symptoms were associated with discrepancies between mothers' and daughters' and mothers' and teachers' reports of girls externalizing symptoms. Maternal anxiety and depression were associated with over-reporting of symptoms that were not confirmed by daughters or teachers.
Boyle et al. (1997) ⁵	1,151	5-12	Negative Affect Balanced Scale, CES-D	CBCL, TRF, YSR	Among 5-7 year olds, there was no association between maternal depression and over-reporting of behavioral problems. Among 8-12 year olds, maternal depression was associated with over-reporting of

Study	Sample Size (children)	Age (years)	Parental assessment	Offspring assessment	Main findings
					conduct problems and hyperactivity.
Chilcoat et al. (1997) ⁶	801	6	NIMH Diagnostic Interview Schedule	CBCL, TRF	Mothers' over-reporting was only evident when mothers' major depression was associated with anxiety disorder.
Youngstrom et al. (1999) ⁷	137		BDI, DES-IV, State-Trait Anxiety Inventory	Assessment of behaviors and emotions using videotapes	Dysphoria provided 10% predictive increment for mother's ratings of children's negative behavior.
Youngstrom et al. (2000) ⁸	394	12-16	Structured interview	CBCL, TRF, YSR	Caregiver depression correlated with higher disagreement with teachers' and youth reports about all CBCL subscales.
Najman et al. (2000) ⁹	5,277	14	DSSI/SAD	CBCL, YSR	Mothers with depression and/or anxiety reported more cases of child behavior problems than healthy counterparts or children themselves.
Treutler et al. (2002) ¹⁰	100	10-12	BSI	CBCL, YSR	Maternal psychological symptoms significantly contributed to discrepancies between maternal and youth reports regarding internalizing, but not externalizing, psychopathology.
Chi and Hinshaw (2002) ¹¹	96	6-10	BDI	Conners, CBCL, TRF	Mothers' level of depressive symptoms predicted negative biases in their reports of their child's ADHD symptoms and behavior problems when compared to teachers' reports.
Kroes (2003) ¹²	68 boys	6-12	SCL-90-R	CBCL, TRF	Maternal psychopathology was associated with small-moderate over-

Study	Sample Size (children)	Age (years)	Parental assessment	Offspring assessment	Main findings
					reporting, mostly on internalizing child problems.
Hennigan et al. (2006) ¹³	253	7.28	Interviews, BSI	CBCL, BERS	Current maternal psychological distress was associated with more pessimistic assessments on CBCL.
Gartstein et al. (2009) ¹⁴	221	10-14	CES-D, BSI	CBCL, TRF, BSI	Modest effect of maternal depression with inflation of son's externalizing and daughter's internalizing problems.
Muller et al. (2011) ¹⁵	124	Preschool	SCL-90-R, BDI	CBCL, TRF	Maternal depression was associated with significant over-reporting of child's internalizing and externalizing symptoms.

Note: ADHD = attention-deficit/hyperactivity disorder; BDI = Beck Depression Inventory; BERS = Behavioral and Emotional Rating Scale; BSI = Brief Symptom Inventory; CBCL = Child Behavior Checklist; CES-D = Center for Epidemiologic Studies Depression Scale; DES-IV = Differential Emotions Scale–Form IV; DICA-R = Diagnostic Interview for Children and Adolescents–Revised; DISC-R = Diagnostic Interview Schedule for Children–Revised; DSSI/SAD = Delusions-Symptoms-States Inventory: State of Anxiety and Depression; HOS = Health Opinion Survey; NIMH = National Institute of Mental Health; SADS = Schedule for Affective Disorders and Schizophrenia; SCL-90-R = Symptom Checklist–Revised; TRF = Teacher Report Form; YSR = Youth Self Reports.

Demographic and Clinical Comparison Between Parents in Current Depression, Mania, and Mood Disorder in Remission

Table 2

	Current depression (n=65)	Current mania (n=42)	Remission (n=181)	Statistics	Overall p-value	Pairwise analysis			
						Dep vs. Mania	Dep vs. Remission	Mania vs. Remission	P-value
Age, mean(SD)	38.9(7.4)	39.6(7.8)	40.2(7.7)	F=0.71	0.49	0.69	0.25	0.61	0.61
SES, mean (SD)	34.4(14.5)	32.0(15.4)	34.9(13.8)	F=0.73	0.48	0.43	0.78	0.23	0.23
Race (% white)	50(76.9)	40(95.2)	150(82.9)	X ² =8.56	0.20	0.27	0.26	0.24	0.24
Sex (% female)	52(80.0)	32(76.2)	153(84.5)	X ² =3.48	0.18	0.64	0.40	0.20	0.20
Marital Status (% married)	30(53.8)	18(42.9)	91(50.3)	X ² =6.66	0.57	0.61	0.64	0.36	0.36
GAF Current, mean(SD)	56.8(10.1)	50.7(10.7)	68.8(12.9)	F=33.48	<0.01	0.93	<0.01	<0.01	<0.01
Lowest past level	31.8(14.2)	34.0(12.6)	40.6(16.7)	F=8.89	<0.01	0.41	<0.01	0.02 ^a	0.02 ^a
Highest past level	68.6(14.0)	67.0(10.1)	76.9(10.3)	F=21.59	<0.01	0.52	<0.01	<0.01	<0.01
BDI, mean(SD)	23.8(10.7)	24.4(11.5)	16.2(11.7)	F=15.1	<0.01	0.86	<0.01	<0.01	<0.01
ALS, mean(SD)	92.6(36.4)	114.3(24.9)	69.0(41.7)	F=16.2	<0.01	<0.01	<0.01	<0.01	<0.01
Psychiatric disorders, n (%)									
BP spectrum	65(100.0)	42(100.0)	124(68.5)	X ² =42.01	<0.01	n/a	<0.01	<0.01	<0.01
Depressive spectrum	0(0.0)	0(0.0)	57(31.5)	X ² =42.01	<0.01	n/a	<0.01	<0.01	<0.01
Lifetime psychosis	1(1.5)	0(0.0)	2(1.1)	X ² =0.61	0.74	1.00	1.00	1.00	1.00
Lifetime SUD	35(53.8)	26(61.9)	66(36.5)	X ² =12.19	<0.01	0.41	0.01	<0.01	<0.01
Lifetime any anxiety disorder	49(75.4)	39(92.9)	116(64.1)	X ² =14.50	<0.01	0.02	0.09	<0.01	<0.01
Lifetime phobia	42(64.6)	34(81.0)	88(48.6)	X ² =16.56	<0.01	0.07	0.03	<0.01	<0.01
Lifetime OCD	10(15.4)	10(23.8)	11(6.1)	X ² =13.03	<0.01	0.28	0.02	<0.01	<0.01
Lifetime PTSD	22(33.8)	18(42.9)	53(29.3)	X ² =2.97	0.23	0.35	0.49	0.09	0.09
Lifetime GAD	21(32.3)	15(35.7)	30(16.6)	X ² =11.26	<0.01	0.72	0.01	0.01	0.01
Lifetime eating disorder	10(15.4)	3(7.1)	22(12.2)	X ² =1.62	0.44	0.20	0.51	0.43	0.43

Note: ALS = Affective Liability Scale; BDI = Beck Depression Inventory; BP = bipolar disorder; Dep = Current depression; GAD = generalized anxiety disorder; GAF = General Assessment of Functioning; OCD = obsessive-compulsive disorder; PTSD = posttraumatic stress disorder; SES=Socioeconomic Status; SUD = Substance use disorder.

^aBecomes insignificant following adjustment for multiple comparisons.

Table 3

Demographic and Clinical Comparison Between Offspring of Parents in Current Depression, Mania and Mood Disorder in Remission

	Parental current depression (n=109)	Parental current mania (n=64)	Parental current remission ^a (n=306)	Statistics	Overall <i>p</i> -value	Pairwise analysis		
						Dep vs. Mania <i>P</i> -value	Dep vs. Remission <i>P</i> -value	Mania vs. Remission <i>P</i> -value
Age, mean(SD)	12.2(3.9)	12.1(3.7)	11.8(3.4)	F=1.08	0.34	0.88	0.18	0.36
SES, mean(SD)	34.1(14.5)	31.2(14.4)	34.4(13.2)	F=1.46	0.43	0.20	0.86	0.09
Race (% white)	91(83.5)	61(95.3)	245(80.1)	X ² =23.75	<0.01	0.02	0.43	<0.01
CGAS Current, mean(SD)	75.1(13.0)	72.3(16.2)	76.4(12.4)	F=2.75	0.07	0.21	0.35	0.02
Lowest past level	66.6(16.1)	62.4(17.1)	66.7(16.1)	F=1.76	0.17	0.12	0.96	0.07
Highest past level	77.3(12.3)	74.4(15.2)	78.5(11.5)	F=2.83	0.06	0.19	0.36	0.02
Psychiatric disorders, n (%)								
Any Axis I disorder	71(65.1)	44(68.8)	171(55.9)	X ² =5.37	0.07	0.63	0.09	0.06
BP Spectrum disorder	5(4.6)	7(10.9)	22(7.2)	X ² =2.47	0.29	0.11	0.34	0.31
Depressive disorder	31(28.4)	25(39.1)	69(22.5)	X ² =7.89	0.02	0.15	0.22	0.01
Psychotic disorder	0(0.0)	0(0.0)	1(0.3)	FET	1.00	n/a	1.00	0.65
Anxiety disorder	40(36.7)	25(39.1)	89(29.1)	X ² =3.75	0.15	0.76	0.14	0.12
Eating disorder	0(0.0)	0(0.0)	1(0.3)	FET	1.00	n/a	1.00	0.65
ADHD	32(29.4)	19(29.7)	73(23.9)	X ² =1.82	0.40	0.96	0.26	0.33
CD	4(3.7)	4(6.3)	13(4.2)	X ² =0.68	0.71	0.46	0.79	0.49
ODD	19(17.4)	13(20.3)	46(15.0)	X ² =1.22	0.54	0.64	0.55	0.29
SUD	4(3.7)	4(6.3)	14(4.6)	X ² =0.61	0.74	0.46	0.69	0.58

Note: ADHD = attention-deficit/hyperactivity disorder; BP = bipolar disorder; CD = conduct disorder; CGAS = Children's Global Assessment Scale; Dep = Current depression; FET = Fisher's exact tests; n/a = not available; ODD = oppositional defiant disorder; SES = socioeconomic status; SUD = substance use disorder.

^aHistory of BP or unipolar depression.

Table 4

Offspring's Child Behavior Checklist (CBCL) Scores

	Parental Current Depression (n=103) Mean(SD)	Parental Current Mania (n=60) Mean(SD)	Parental Current Remission (n=278) Mean(SD)	ANOVA		Pairwise Analysis		
				F-stat	P-value	Dep vs. Mania P-value	Dep vs. Remission P-value	Mania vs. Remission P-value
Total Problem	38.2(29.2)	41.8(29.3)	29.9(25.2)	7.00	<0.01	0.44	0.01	<0.01
Internalizing	10.6(8.6)	12.7(10.5)	8.9(8.2)	5.18	0.01	0.19	0.10	0.01
Externalizing	12.2(12.8)	12.7(10.6)	8.9(8.7)	7.22	<0.01	0.80	0.01	0.01
Anxious/depressed	4.6(4.1)	6.2(5.5)	4.0(4.1)	6.00	<0.01	0.06	0.24	0.01
Withdrawn/depressed	2.9(2.6)	3.0(2.8)	2.5(2.6)	1.72	0.18	0.93	0.13	0.20
Somatic	3.1(3.3)	3.6(3.8)	2.5(3.2)	3.57	0.03	0.40	0.10	0.03 ^a
Social problems	3.7(3.9)	4.1(4.1)	3.0(3.4)	3.30	0.04	0.48	0.11	0.04 ^a
Thought problems	2.8(3.9)	2.9(3.1)	2.1(2.8)	2.68	0.07	0.83	0.11	0.08
Attention	4.0(3.4)	4.1(3.5)	3.1(3.3)	3.92	0.02	0.88	0.03 ^a	0.05
Rule-breaking	3.0(3.2)	3.3(4.0)	2.1(2.5)	6.11	<0.01	0.72	0.01	0.04 ^a
Aggressive	9.2(8.2)	9.4(7.8)	6.7(6.7)	6.42	<0.01	0.87	0.01	0.02 ^a

Note: ANOVA = analysis of variance; Dep = current depression.

^aBecomes insignificant following adjustment for multiple comparisons.

Table 5

Offspring's Youth Self Reports (YSR) Scores

	Parental Current Depression (n=64) Mean(SD)	Parental Current Mania (n=33) Mean(SD)	Parental Remission (n=153) Mean(SD)	ANOVA		Pairwise Analysis		
				F-stat	P-value	Dep vs. Mania P-value	Dep vs. Remission P-value	Mania vs. Remission P-value
Total Problem	47.9(22.9)	56.3(36.9)	43.5(23.5)	3.75	0.03	0.21	0.20	0.05 ^a
Internalizing	13.3(8.5)	17.1(12.6)	11.6(8.6)	5.06	0.01	0.12	0.19	0.02 ^a
Externalizing	15.3(7.9)	16.3(10.7)	13.6(7.9)	1.89	0.15	0.64	0.16	0.18
Anxious/depressed	4.7(4.1)	7.1(6.3)	4.5(4.3)	4.59	0.01	0.05 ^a	0.75	0.03 ^a
Withdrawn/depressed	4.4(2.8)	4.9(3.4)	3.5(2.6)	4.50	0.01	0.50	0.04 ^a	0.04 ^a
Somatic	4.2(3.3)	5.2(4.3)	3.6(3.1)	3.13	0.05	0.27	0.22	0.06
Social problems	4.5(3.6)	5.3(4.0)	3.8(3.3)	2.90	0.06	0.32	0.20	0.05 ^a
Thought problems	4.0(3.3)	4.8(4.7)	3.6(3.4)	1.76	0.17	0.40	0.36	0.16
Attention	6.1(2.9)	7.0(3.9)	5.9(3.0)	1.70	0.19	0.24	0.68	0.13
Rule-breaking	7.4(3.7)	6.8(4.5)	6.2(3.5)	2.17	0.12	0.50	0.04 ^a	0.54
Aggressive	7.9(5.0)	9.5(6.8)	7.4(5.3)	2.12	0.12	0.24	0.48	0.10

Note: ANOVA = analysis of variance; Dep = current depression.

^aBecomes insignificant following adjustment for multiple comparisons.