
Clinical Implications of Pervasive Manic Symptoms in Children

Gabrielle A. Carlson and Eric A. Youngstrom

Background: *Prior investigations of cross-informant agreement among parents, teachers, and clinicians about externalizing and internalizing problems have not directly addressed agreement about manic symptoms.*

Methods: *We identified three groups from a large cohort of youths, aged 8–12 years, treated on an inpatient unit. All 108 participants met criteria for an externalizing disorder, based on a semi-structured diagnostic interview. Of these, 49 did not have manic symptoms endorsed by either the parent or a teacher; 34 had manic symptoms reported by the parent only, and 25 had pervasive manic symptoms (i.e., corroborated by both sources).*

Results: *The “corroborated mania” group consistently showed the most disruptive behavior on the inpatient unit, the worst behavior problems on multiple scales, and the longest admission durations. The “parent-only” group scored in the midrange on all of these measures, with group differences typically representing small to medium effect sizes. The “externalizing only” group consistently scored lowest on all dependent measures, with the differences representing large to extremely large effects when compared with the corroborated mania group and medium effects as compared with the parent-only group.*

Conclusions: *Youths for whom multiple informants report manic symptoms appear likely to have more severe symptom presentation and more complicated, refractory courses than do youths without manic symptoms. Biol Psychiatry 2003;53:1050–1058 © 2003 Society of Biological Psychiatry*

Key Words: Bipolar disorder, mania, cross-informant ratings, children, adolescents, validity

Introduction

Wrestling with discrepant informant data has traditionally been the domain of child and adolescent psychopathology. Jensen et al (1999) recently reviewed the poor parent–child agreement for both internalizing (depression and anxiety) and externalizing (attention-deficit/hyperactivity [ADHD], oppositional defiant [ODD], and conduct [CD]) disorders. Algorithms for handling the different information sources ultimately use the “OR” rule (which treats a positive response from any single source as an occurrence of the symptom or disorder) (Bird et al 1992; Piacentini et al 1992); however, Jensen’s study concluded that the psychometric soundness of the instruments, credibility of the informant for the kind of information being provided, and the presence of external validators should be used instead to sort out the validity of informant report.

The second type of informant variance is that between different adult informants about the child, usually parents and teachers. Modest rating scale correlations ($r = .2$ for internalizing disorders, $r = .4$ for externalizing disorders [Hinshaw and Nigg 1999]) occur here, too. Caregiver stress, depression, substance abuse, and antisocial behavior may influence parent ratings (Loeber et al 1998), though this contribution is small (Youngstrom et al 1999). On the other hand, behavior problems in children are also likely to increase parental stress, so the direction of the relationship is not clear (Lytton 1990). Achenbach et al (1987) contend that cross-setting disagreements provide important clinical and diagnostic information. Although there is disagreement regarding how to interpret differences between parents and teachers reporting on a child’s ADHD symptoms (Biederman et al 1990; Mitsis et al 2000), there is consensus that the child who receives both endorsements is usually more impaired.

Attempts at reconciling informant bias and child/setting behavior differences have usually addressed childhood behavior disorders, depression, and anxiety (e.g., Epkins 1996; Richters 1992). There have been no attempts to examine the informant variance for mania in adults or children. Most data addressing the diagnosis of prepubertal mania are derived from structured interviews of the

From the Departments of Psychiatry and Pediatrics (GAC), State University of New York at Stony Brook, Stony Brook, New York; and Departments of Psychology and Psychiatry (EY), Case Western Reserve University, Cleveland, Ohio.

Address reprint requests to Gabrielle A. Carlson, M.D., Psychiatry and Pediatrics, Child and Adolescent Psychiatry, State University of New York at Stony Brook, Putnam Hall–South Campus, Stony Brook NY 11794-8790.

Received August 1, 2003; revised December 15, 2002; accepted January 9, 2003.

parent or parent and child and basically use the “OR” rule, presumably symptom by symptom, though that hasn’t been specified. Cross-situational or pervasive mania have not been examined.

There are several reasons to study these issues in mania. First, mania is both an internalizing and externalizing disorder. Euphoric mood, racing thoughts, and grandiosity are usually subjective, internalized experiences, whereas distractibility, flight of ideas, irritability, agitation/hyperactivity, or extreme pleasure-seeking behavior should be external and observable. The “internalizing” symptoms are likely to require a certain level of sophistication, language ability, and maturity to describe. The externalizing symptoms, including ADHD symptoms, are developmentally mediated as well. Second, the apparent co-occurrence of mania with ADHD also suggests that mania should be examined with information from several settings, as is required for ADHD. Whether single-setting psychopathology represents a milder form of psychopathology or a different condition has not been examined, either.

The purpose of the present study was to examine the clinical implications of single-setting (parent-reported) versus pervasive (parent- and teacher-reported) manic symptoms. The report addresses the following questions:

1. Within a group of children seriously impacted by hyperactivity, inattention, impulsivity, and irritability (i.e., externalizing disorders), are parent reports of manic symptoms, specifically elevated mood and perceived grandiosity, also observed by trained observers over the course of an inpatient stay? (Irritable, explosive behavior was so frequent in this setting that rates did not differ between groups. Only 7.5% of parents said their child was never explosive; 71.4% reported this behavior occurring often or very often).
2. If, like ADHD, these manic symptoms are observed in two or more settings, will children with parent- and teacher-observed manic symptoms appear more manic on inpatient mania ratings (i.e., higher Young–Mania Rating Scale) scores? Will nurse or inpatient teacher ratings of overactivity, “euphoria,” irritability/aggression, anxiety/depression, and self-control be higher for such children? Will rates of episodic bipolar I disorder (mania, depression, euthymia) be different?
3. Does hospital course differ among children with externalizing only, parent-reported, and pervasive manic symptoms?

Methods and Materials

Because the subjects were hospitalized 10 to 15 years prior to this study, it was deemed impractical to obtain consents for this

retrospective chart review, and a waiver of consent was granted. The study was approved by the Stony Brook Committee on Research Involving Human Subjects.

Sample

Inpatient assessment has been described elsewhere (Carlson and Kelly 1998). There were 154 first admissions to the 10-bed Children’s Inpatient Service between September 1987 and December 1993 who were older than 8 years and interviewed with the Yale Version of the Structured Interview for Affective Disorder and Schizophrenia for Children (K-SADS; Orvaschel et al 1982; Weissman et al 1987) within 2 weeks of admission (91.7% of cases). The clinical child psychologist doing the interviews was blind to preadmission data.

A subsample of 108 children was selected, who met DSM-III-R criteria for ADHD, ODD, and/or CD and who had parent- and teacher-completed versions of the Child Symptom Inventory (CSI; Gadow and Sprafkin 1994) before admission. This version of the CSI had an 8-item category for manic symptoms (Carlson and Kelly 1998), which included two specific items: “is abnormally cheerful” (i.e. euphoric) and “feels he has extraordinary or special abilities” (i.e., grandiosity). Parent and/or parent–teacher endorsement on these items allowed us to subdivide the study sample as follows. Children with parent-reported mania only (i.e., children whose parents endorsed euphoria or grandiosity at the “often” or “very often” level; $n = 34$) constituted the ParMa group. Children whose parent reported these manic symptoms and for whom the symptoms were corroborated in at least one other setting, at least at the “sometimes” level, constituted the pervasive or corroborated mania (CorrobMa) group ($n = 25$). Parents who did not report abnormally cheerful mood or extraordinary/special abilities were in the externalizing-only (ExtOnly) group ($n = 49$). Correlation between parent and teacher manic symptoms on the CSI was $r = .3, p < .001$.

Assessment and Measures

The CSI is a DSM-based rating scale with “never,” “sometimes,” “often,” and “very often” choices. The K-SADS yielded DSM-III diagnoses (American Psychiatric Association 1980) and was supplemented by autism items from the Diagnostic Interview for Children and Adolescents (Reich et al 1982) and questions for DSM-III-R ADHD, ODD, and CD were added after 1988. The Young–Mania Rating Scale (Y-MRS; Young et al 1978) and the Children’s Depression Rating Scale–Revised (CDRS-R; Poznanski et al 1984) were completed by the child psychologist after the child had been hospitalized for a week using the primary nurse in lieu of a parent. The Y-MRS was administered as it had originally been developed for inpatient samples. Finally, the day and evening shift nurses completed the Inpatient Global Rating Scale (Conners 1985), an instrument with scales similar to the Child Behavior Checklist (Achenbach 1991) and the Teacher Self-Control Rating Scale (TSCRS; Humphrey 1982). The cognitive scale of the latter addresses executive function items, such as “anticipates consequences of his/her actions, knows when s/he is misbehaving without being told, plans ahead what to do before

Table 1. Demographic Data

	1 ExtOnly (<i>n</i> = 49)	2 ParMa (<i>n</i> = 34)	3 CorrobMa (<i>n</i> = 25)	Test	1,2	1,3	2,3
Age (years)	10.74 (1.36)	9.89 (1.35)	10.27 (1.55)	.02	ns	ns	
Median Length of Stay (days)	55	75	104	21.230	.006	.006	.09
Young–Mania Rating Scale (Y-MRS)	10.85 (6.45)	15.90 (7.65)	17.50 (7.89)	10.459	.003	.000	ns
<i>n</i> (%) Y-MRS ≥ 20 (<i>n</i> [%])	5 (10.6)	11 (34.4)	8 (36.4)	8.386, 2 df, <i>p</i> = .015			
K-SADS Admit Diagnosis (<i>n</i> [%])							
Externalizing Only (<i>n</i> [%])	22 (44.9)	18 (52.9)	8 (32.0)	ns			
Comorbid Internalizing/Externalizing (<i>n</i> [%])	27 (55.1)	16 (47.0)	17 (68.0)	ns			
Major depression	16 (33.3)	5 (14.7)	9 (36.0)	ns			
Minor depression/dysthymia	17 (34.7)	6 (32.4)	11 (48.0)	ns			
Attention-deficit/hyperactivity	33 (67.3)	24 (70.6)	22 (88.0)	ns			
Conduct disorder	30 (61.2)	22 (68.8)	9 (37.5)	ns			
Oppositional defiant disorder	39 (79.6)	26 (78.8)	22 (88.0)	ns			
Bipolar I (<i>n</i> [%])	4 (8.2)	4 (12.1)	2 (8.0)	ns			
PDD/Psychosis/Schizophrenia by History (<i>n</i> [%])	3 (6.1)	4 (11.8)	2 (8.0)	ns			
Learning Disability by History (<i>n</i> [%])	18 (36.7)	9 (26.5)	9 (36.0)	ns			

Values are *n* (%) or mean (SD) unless otherwise noted. ExtOnly, externalizing disorders only; ParMa, parent only reported manic symptoms (situational); CorrobMa, parent and one other informant reported manic symptoms (pervasive); K-SADS, Schedule for Affective Disorders and Schizophrenia, Childhood Version; PDD, pervasive developmental disorder.

acting.” Two special education teachers who conducted classes during the regular academic year and a 6-week summer program also completed the TSCRS and a scale measuring attention deficit disorder, the ADD-H Comprehensive Teacher Rating Scale (ACTeRS; Ullman et al 1985).

Statistical Analysis

Group comparisons with variables with extremely non-normal distributions were based on the Kruskal-Wallis nonparametric procedure, followed up by pair-wise comparisons using the Mann-Whitney *U* score. Normally distributed group differences were evaluated using analysis of variance (ANOVA) or a mixed multivariate ANOVA for between-group effects measured over time. Wilks λ and the corresponding omnibus *F* test are presented for the multivariate analyses. Univariate group differences at a single time points were then examined using the Games-Howell post hoc procedure, which does not require equivalent variances across the groups (Kirk 1995). Because the parent-rated mania (ParMa) group included significantly younger children, analyses of covariance treating age as a covariate were also examined for consistency of results.

Group differences are presented in terms of Cohen's *d*, a widely used effect size that divides the mean difference between two groups by the pooled SD (Cohen 1988). Cohen suggested benchmarks of *d* = .20, .50, and .80 as indicating small, medium, and large effect sizes for the social sciences. Presenting effect sizes not only follows current recommendations for statistical reporting, but it also provides an opportunity to examine the consistency of findings in situations with low statistical power.

Results

Demographics

Demographic data are shown in Table 1. There were no statistically significant differences by age, gender, unit ratings (including Y-MRS), “time outs,” and parent CBCL and parent CSI between the children with versus without teacher information.

The mean age was 10.36 (SD 1.44) years, with the ExtOnly children being somewhat older than the ParMa children (10.74 vs. 9.89, *p* = .02). Most were male (77%), Caucasian (80.6%), with 15.5% African American and 3.9% other. Wechsler Intelligence Scale for Children–Revised full-scale intelligence quotient was 101.07 (SD 17.42). Clinically, children with any parent-reported manic symptoms of euphoria or grandiosity, whether corroborated or not, were hospitalized significantly longer than were ExtOnly children.

Mood Ratings

Mood ratings are reported in Table 1. The mean, first administered Y-MRS score, available for 102 children, was 13.78 (SD 8.64). Twenty-seven percent had scores ≥ 20, the score commonly used to enroll adult manic subjects into drug studies. Children with CorrobMa had the highest mean scores, 17.50 (SD 7.89), slightly higher than children with ParMa, 15.90 (SD 7.65) and significantly higher than ExtOnly, 10.85 (SD 6.45). This corre-

sponded with effect sizes of $d = .96$ (CorrobMa vs. ExtOnly) and $d = .73$ (ParMa vs. ExtOnly), but only $d = .21$ when comparing CorrobMa with ParMa. There were significant, negative age correlations for the Y-MRS total score, elevated mood, activity level, and aggressive behavior items. The significance of the total Y-MRS score difference remained after age correction, but the only individual items that ultimately distinguished the groups were increased motor activity ($F = 7.264, p < .001$) and rapid speech ($F = 8.497, p < .001$). There was a trend ($p = .077$) for aggression but not irritability ratings to be higher in CorrobMa subjects. There were few extreme scores, so that although 18% of children had a somewhat elevated mood (item scores of 1 and 2), none was inappropriately elevated or euphoric (scores of 3 or 4). Only 7% of children were grandiose/delusional. Significant irritability was seen in 53% of children (scores 3–6), and no one scored an 8 (interview impossible because of hostility); demanding and threatening behavior was present in 35% (scores 3–6). If being out of control to the point of needing seclusion/restraint is a marker of assaultiveness, 28% of children needed at least one seclusion the first week of hospitalization; however, children with CorrobMa who needed this intervention needed it twice as often as did such children in the other two groups. Uninterruptible speech was present in 6% of children (though verbosity was more common at 15%); off-topic speech was observed in 11% of children, but flight of ideas was present in only 2%.

Depression severity scores (admission CDRS-R) did not differ by groups. The average score was 38.3 (SD 13.7), and 40.5% had scores ≥ 40 . The largest observed mean difference, between the CorrobMa and ExtOnly groups, still represented a small effect size of $d = .39$.

Diagnoses by Structured Interview

Children had multiple diagnoses by admission K-SADS (see Table 1). By study definition, all had at least one (and often more than one) externalizing disorder. Distribution of Axis I diagnoses, including developmental and learning disorders, did not differ between groups. Less than 10% of the sample met DSM-III criteria for bipolar I disorder. Although most of the children were described by parents as irritable/explosive, this symptom did not occur within the context of a distinct period accompanied by other symptoms of mania and fit best within the context of DSM-III-R ODD (often loses temper, argues, defies, annoys, is often easily annoyed, often angry and resentful). In addition, the child's ADHD symptoms (hyperactivity, distractibility, excessive talking, intrusive and impulsive behavior, low frustration tolerance) were not episodic

Table 2. Median Number of "Time Outs" in Children over First 4 Weeks of Hospitalization

Week	Group	n	Median	Kruskal-Wallis	p
1	ExtOnly	44	2	3.36	.187
	ParMa	27	1		
	CorrobMa	23	4.5		
2	ExtOnly	44	2	9.54	.008
	ParMa	28	4		
	CorrobMa	21	7		
3	ExtOnly	40	2	14.24	.001
	ParMa	29	5		
	CorrobMa	20	7		
4	ExtOnly	36	2	8.43	.015
	ParMa	31	5		
	CorrobMa	22	6		

ExtOnly, externalizing disorders only; ParMa, parent only reported manic symptoms (situational); CorrobMa, parent and one other informant reported manic symptoms (pervasive).

either, and although there were certainly times when symptoms could be better or worse, these fluctuations did not constitute a distinct period that lasted a week. Reliability between parent and child on the K-SADS mania screening items was negligible ($\kappa = 0.016$).

Severity of Symptoms

Rating scales were examined over the first 4 weeks of hospitalization. Only five children were discharged over that time. Two children were missing some ratings for the first 2 weeks of hospitalization. Seventy to eighty percent of children were observed without medication for the first week or two of admission. By weeks 3–4, two thirds of children were taking medication; rates did not differ between groups.

Symptom severity was measured by number of "time outs" given by teacher and by primary nurse ratings over the first 4 weeks in hospital. Each inappropriate act of commission or omission earned a "minus 10" or warning. If the behavior persisted to a loss of 30 points, the child received a "time out." Certain behaviors (e.g., physical aggression) were given an immediate "time out" (Rappaport et al 1992). As noted in Table 2, the ExtOnly children had a median of two "time outs" over the course of 4 weeks. Children with ParMa had twice as many "time outs," and their behavior was in much better control the first week of admission. Children with CorrobMa experienced three times the number of "time outs" as the ExtOnly group and were clearly more impaired from the day of admission.

Inpatient teacher ratings during the school year provided a second measure of symptom severity (Table 3). The hyperactivity factor from the weekly ACTerS best measured "manic" symptoms. Children with CorrobMA rated significantly higher, even with age correction, than

Table 3. Teacher Ratings of Children's Behavior

Week	Group	n	Mean	SD	F	Effect Sizes		
						ExtOnly/ ParMa	ExtOnly/ CorrobMa	CorrobMa/ ParMa
ADD-H Comprehensive Teacher Rating Scale, Hyperactivity Factor (higher scores worse)								
1	ExtOnly	44	12.70	5.39	5.29 ^b	.50	.80 ^a	.30
	ParMa	27	15.44	5.62				
	CorrobMa	23	17.17	5.90				
2	ExtOnly	44	12.05	5.08	7.79 ^c	.61 ^a	1.01 ^c	.38
	ParMa	28	15.29	5.59				
	CorrobMa	21	17.48	6.01				
3	ExtOnly	40	10.65	4.63	5.36 ^b	.36	.89 ^a	.52
	ParMa	29	12.38	4.97				
	CorrobMa	20	15.25	6.27				
4	ExtOnly	36	10.33	3.88	1.90	.36	.53	.12
	ParMa	31	11.97	5.18				
	CorrobMa	22	12.59	4.96				
Teacher-Completed Teacher Self-Control Rating Scale, Cognitive Scale (lower scores worse)								
1	ExtOnly	44	74.25	18.17	2.80	.19	.63 ^a	.42
	ParMa	27	70.78	19.18				
	CorrobMa	23	63.43	15.10				
2	ExtOnly	44	77.02	16.54	3.84 ^a	.37	.79 ^a	.31
	ParMa	28	70.21	20.98				
	CorrobMa	21	64.52	14.40				
3	ExtOnly	40	79.00	20.56	1.76	-.05	.43	.52
	ParMa	29	79.90	17.17				
	CorrobMa	20	69.95	22.01				
4	ExtOnly	36	86.22	17.99	1.53	.16	.47	.31
	ParMa	31	83.32	17.96				
	CorrobMa	22	77.68	18.29				

ExtOnly, externalizing disorders only; ParMa, parent only reported manic symptoms (situational); CorrobMa, parent and one other informant reported manic symptoms (pervasive).

^a*p* < .05, two-tailed
^b*p* < .01, two-tailed
^c*p* < .005, two-tailed

did ExtOnly children on this factor until the fourth week of hospitalization. The median effect sizes across the 4 weeks represented large differences between the CorrobMa and ExtOnly groups (*d* = .85), medium-sized differences between the ParMa and ExtOnly groups (*d* = .43), and small differences between the two manic groups (*d* = .34). See Figure 1.

Teachers also completed the TSCRS. Similar to hyperactivity levels, the CorrobMa children were always the most compromised (median *d* = .83 across 4 weeks on the cognitive scale vs. ExtOnly, and median *d* = .33 vs. ParMa), followed by children with ParMa (median *d* = .44 vs. ExtOnly). The ExtOnly children had the best TSCRS ratings. Only the data from the second week achieved statistical significance: *F*(2,90) = 3.80, *p* = .025. The CorrobMa group scored worse than the ExtOnly group (*p* < .05). Over the initial 4 weeks, however, between classroom structure and medication, all four groups showed improvement: Wilks λ = 567, *F*(3,53) = 13.52, *p* < .00005 for time effect. There were no significant differences in the rate of improvement across groups: Wilks λ = .899, *F*(6,106) = .55, *p* = .454 (see Figure 2).

The child's primary nurse completed the Inpatient Global Rating Scale (Table 4). We examined the day shift total psychopathology score, and scales measuring aggression, overactivity, "euphoria" (which was a measure of extroverted behavior), and anxiety/depression. The anxiety/depression score did not differ significantly among groups, and differences in the "euphoria" factor disappeared when controlled for age. Children with CorrobMa were again the most symptomatic. The median effect sizes on the total psychopathology score were *d* = 1.33 for the CorrobMa versus ExtOnly comparison, *d* = .61 for ParMa versus ExtOnly, and *d* = .44 for the CorrobMa versus ParMa group. See Figure 3.

On the overactivity factor, the CorrobMa group continued to show the largest effect size compared with the ExtOnly group (median *d* = 1.45), the ParMa group showed median effect sizes of .76 compared with ExtOnly, and the difference between the two mania groups was *d* = .48. The aggression/conduct factor differences were smaller (CorrobMa vs. ExtOnly, median *d* = .86, ParMa vs. ExtOnly, median *d* = .35, CorrobMa vs. ParMa, median *d* = .48).

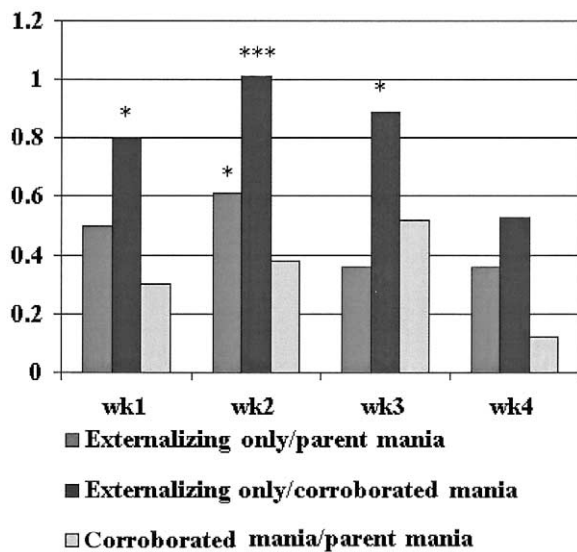


Figure 1. Effect sizes for teacher hyperactivity ratings, as rated with the ADD-H Comprehensive Teacher Rating Scale. * $p < .05$; ** $p < .01$; *** $p < .005$.

Nurses also completed the TSCRS. A repeated-measures multiple ANOVA found significant group differences in self-control across all 4 weeks: $F(2,96) = 5.70$, $p < .05$. The CorrobMa group earned significantly worse self-control ratings on all 4 weeks as compared with the ExtOnly group (all post hoc p 's $< .0005$). Similarly, the ParMa group showed significantly poorer self-control than the ExtOnly group in 1 of the 4 weeks (post hoc $p < .05$). The CorrobMa children always had the worst self-control ratings ($d = .94$ vs. ExtOnly; $d = .40$ vs. ParMa), followed by the ParMa children ($d = .55$ vs. the ExtOnly group). There were no group differences in change over time: Wilks $\lambda = .963$, $F(6,188) = 0.60$, $p = .727$. See Figure 4.

Finally, the teacher and nurse ratings were measured between groups over the course of hospitalization, using the first 2 weeks and last 2 weeks of hospitalization. There was a significant main effect by group, but not by time, and there were no group \times time interactions. Children with CorrobMa were hospitalized longer and at time of discharge were still significantly more impaired than children with ExtOnly diagnoses.

Discussion

These results demonstrate that psychiatrically hospitalized children with externalizing disorders (ADHD, ODD, and/or CD) and additional manic symptoms (euphoria/grandiosity) observed in more than one setting before admission have greater total psychopathology scores, hyperactivity ratings, poorer self-control, and longer hospitalizations than do hospitalized children with externalizing

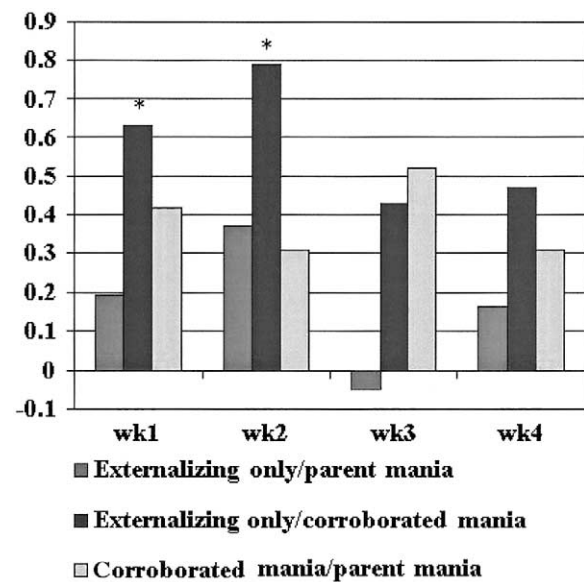


Figure 2. Effect sizes for the teacher-completed Teacher Self-Control Rating Scale (cognitive factor). * $p < .05$.

disorders without manic symptoms. Children with manic symptoms reported only by parents were more disturbed in hospital than were children without manic symptoms, but less disturbed than those with pervasive manic symptoms. Although total Y-MRS scores were significantly higher in children with pervasive manic symptoms, it was increased motor activity and rapid speech rather than euphoria and grandiosity that accounted for the differences once age was taken into consideration.

All told, these results suggest that requiring mania symptoms from *both* parent and teacher symptoms selects children with greater severity and impairment, and even with only one informant source, parent-rated euphoria and grandiosity predicts a more protracted course of hospitalization. Considering how poor the interview reliability for euphoria and irritability was between parent and child, the fact that manic symptoms can be endorsed on a rating scale in two separate settings and demonstrate higher Y-MRS scores and total psychopathology in a third and unrelated setting speaks well for the clinical significance of cross-setting observations.

Interestingly, inpatient staff (clinical psychologist on the Y-MRS and nurses on rating scales) did not observe higher levels of euphoria or grandiosity in children with situational or pervasive manic symptoms. Higher levels of motor and verbal activity accounted for the difference. Children with DSM-III–defined bipolar disorder occurred equally across groups. (In fact, a number of children were not even in the sample because they were admitted in a depressive episode and did not have comorbid externalizing disorder.) Thus, although children were more im-

Table 4. Nurse Ratings of Children's Behavior

Week	Group	n	Mean	SD	F	Effect Sizes		
						ExtOnly/ ParMa	ExtOnly/ CorrobMa	CorrobMa/ ParMa
Summary of Total Psychopathology Score, Nurses Day Shift (higher scores worse)								
1	ExtOnly	49	45.08	22.80	10.00 ^d	.52	1.19 ^d	.55
	ParMa	33	57.91	28.01				
	CorrobMa	24	71.79	21.88				
2	ExtOnly	49	46.73	22.02	14.29 ^d	.58 ^a	1.45 ^d	.70 ^a
	ParMa	33	60.58	26.46				
	CorrobMa	24	76.50	17.57				
3	ExtOnly	48	46.02	18.81	14.90 ^d	.69 ^b	1.41 ^d	.61
	ParMa	33	59.97	22.21				
	CorrobMa	24	72.71	19.29				
4	ExtOnly	45	47.00	17.82	9.09 ^d	.64 ^a	1.24 ^d	.33
	ParMa	33	61.91	30.59				
	CorrobMa	25	70.84	21.74				
Nurses Day Shift Completed Teacher Self-Control Rating Scale, Cognitive Scale (lower scores worse)								
1	ExtOnly	48	80.35	18.10	4.00 ^a	.31	.72 ^a	.39
	ParMa	31	74.71	18.85				
	CorrobMa	24	67.71	16.74				
2	ExtOnly	49	78.08	15.46	5.13 ^b	.47	.77 ^c	.26
	ParMa	32	70.66	16.26				
	CorrobMa	24	66.79	12.84				
3	ExtOnly	48	78.83	14.98	6.24 ^c	.42	.89 ^c	.45
	ParMa	33	72.52	15.21				
	CorrobMa	24	66.29	12.27				
4	ExtOnly	45	79.53	14.27	6.66 ^c	.60 ^a	.88 ^c	.19
	ParMa	33	70.48	15.92				
	CorrobMa	24	67.92	11.01				

ExtOnly, externalizing disorders only; ParMa, parent only reported manic symptoms (situational); CorrobMa, parent and one other informant reported manic symptoms (pervasive).

- ^ap < .05, two-tailed
- ^bp < .01, two-tailed
- ^cp < .005, two-tailed
- ^dp < .0005, two-tailed

paired, there was no evidence of higher rates of classically defined mania, and we cannot answer whether the children have worse ADHD, different ADHD, or a subtype of bipolar disorder. Why is that? Unfortunately, despite considerable work by some investigators to define these constructs in research samples (Geller et al 2002), there is considerable inconsistency regarding how euphoric mood and grandiosity are ascertained in general, and especially in clinical samples. For instance, Shaffer and Fisher (personal communication, June 17, 2002) examined 10 systematic interviews used to elicit mania in children and found that euphoric mood could be defined as "good," "high," or "more happy," "more excited," or "more cheerful" than either "usual" or "normal." For grandiosity, feeling "more important," or thinking you have "special talents" and "increased self confidence" was used. In this study, a parent's affirmation that her child had at least 2 or more days of being abnormally cheerful, or believed that s/he had special abilities, etc., was meant to elicit mania (Carlson and Kelly 1998). We cannot compare symptoms

on the rating scale with K-SADS interview items because different constructs were used, the interviewer was blind to parent ratings and thus could not clarify inconsistencies, and there was up to a 2-week gap between when parents completed admission rating scales and when they were interviewed. We have noted elsewhere, moreover, a sustained period of observation in a controlled setting can also clarify a number of reasons why a child may appear "manic" in one setting and not another (Carlson and Fahim 1998). Two conclusions are warranted. First is that the stability, validity, and age-related aspects of these cardinal symptoms of mania are in need of greater attention, and, as with other childhood conditions, more than one source of information may be necessary for a better understanding of the phenomenology in question. Second, hyperactive, irritable children who appear to be pervasively "euphoric/elated/grandiose" constitute a more seriously disturbed population than children without these symptoms, regardless of whether they have episodes that meet stringently defined mania criteria.

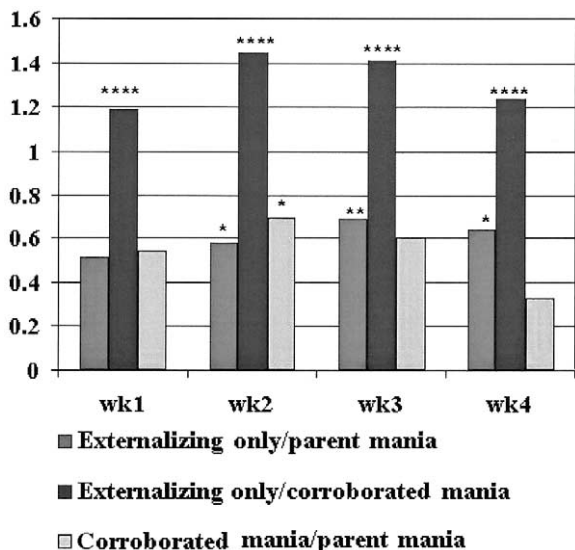


Figure 3. Effect sizes for nurse total psychopathology ratings. * $p < .05$; ** $p < .01$; *** $p < .005$; **** $p < .0005$.

Limitations

There were a number of limitations to this study. First, our findings probably do not generalize to a sample of relatively uncomplicated children with mild to moderate ADHD. Second, over the past 15 years diagnostic criteria, interviews, rating scales, and the diagnosis of bipolar disorder have changed considerably (Carlson 2002), the latter driven mainly by the different conceptualization of what constitutes an “episode.” In this study, an episode of mania, as defined by the K-SADS we used, had to be a clearly defined period of at least 7 days, when the child had at least four manic symptoms that were clearly different from his/her usual behavior. This stringent criterion may account for the low rates of bipolar disorder. In fact, classic manic-depressive illness (mania, depression, euthymia) is low in prepubertal children. The crux of the controversy is whether this definition is too narrow (Biederman et al 1998).

With respect to raters, the inpatient unit was fortunate in that the same clinical child psychologist administered the interviews and rating scales for the duration of the inpatient database. Staff turnover was relatively low, and nurses starting to work on the unit were trained to use both the behavior management plan and the rating scales. Nevertheless, these were clinical nurses, not highly trained raters. They were blind, however, to parent and teacher admission ratings, so their ratings were independent. Like teachers, they had a good sense of what was normative for the age group being treated. Not all parents and teachers completed rating scales, although there did not appear to be any systematic bias in child psychopathology.

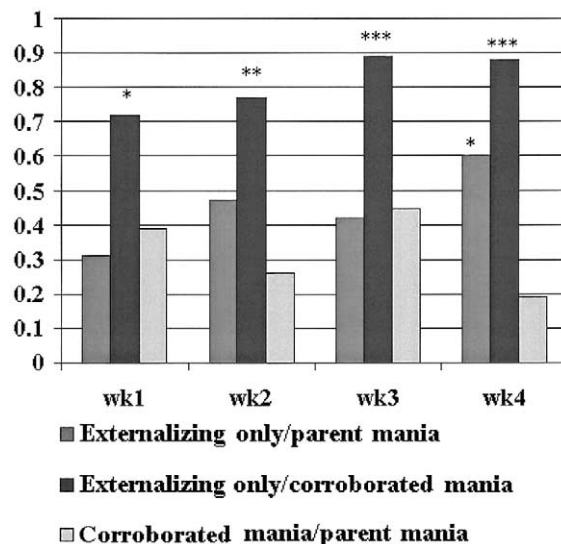


Figure 4. Effect sizes for nurse-completed Teacher Self-Control Rating Scale (cognitive factor). * $p < .05$; ** $p < .01$; *** $p < .005$.

These results suggest the following hierarchy of conclusions. If a child has comorbid ADHD and other externalizing disorders and at least one parent reporting what sounds like elevated mood and grandiosity, the child is likely to have greater impairment than a child with ADHD alone. If manic symptoms in children are reported in more than one setting, s/he most assuredly has a more severe disorder that is apparent from the outset. In the case of clinical trials, we would speculate that the latter group would not include placebo responders, given how treatment-resistant they were over the course of hospitalization. It is also likely that multiple medication trials will be necessary to achieve stabilization, and parents should be made aware of that reality from the start. Some clinicians in the United States might consider diagnosing children with chronic externalizing disorder and pervasive manic symptoms with a bipolar disorder, though whether the child would be given a bipolar not otherwise specified or bipolar I designation will depend on how stringently one defines an episode and distinct period.

Aspects of this work were presented at the Meeting of the International Society for Research in Child and Adolescent Psychopathology; and at the conference, “Pediatric Bipolar Disorder,” held March 9, 2002 in Boston, Massachusetts. The conference was sponsored by the Massachusetts General Hospital through an unrestricted educational grant provided by Janssen Pharmaceutica.

References

- Achenbach TM (1991): *Manual for the Child Behavior Checklist 4–18 and 1991 Profile*. Burlington, VT: University of Vermont Department of Psychiatry.
- Achenbach TM, McConaughy SH, Howell CT (1987): Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychol Bull* 101:213–232.
- American Psychiatric Association (1980): *Diagnostic and Statistical Manual, 3rd ed.* Washington, DC: American Psychiatric Press.
- Biederman J, Keenan K, Faraone SV (1990): Parent-based diagnosis of attention deficit disorder predicts a diagnosis based on teacher report. *J Am Acad Child Adolesc Psychiatry* 29:698–701.
- Biederman J, Klein RG, Pine DS, Klein DF (1998): Resolved: Mania is mistaken for ADHD in prepubertal children. *J Am Acad Child Adolesc Psychiatry* 37:1091–1096; discussion 1096–1099.
- Bird H, Gould M, Stagheza B (1992): Aggregating data from multiple informants in child psychiatry epidemiological research. *J Am Acad Child Adolesc Psychiatry* 31:78–85.
- Carlson GA (2002): Current concepts of bipolar disorder in youth. In: Shaffer D, Waslick B, editors. *The Many Faces of Depression in Childhood and Adolescence*. APA Annual Review of Psychiatry. Washington, DC: APPI Press, 105–128.
- Carlson GA, Fahim F (1998): “George.” *J Affect Disord* 51:195–198.
- Carlson GA, Kelly KL (1998): Manic symptoms in psychiatrically hospitalized children—what do they mean? *J Affect Disord* 51:123–135.
- Cohen J (1988): *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed. Hillsdale, NJ: Lawrence Erlbaum.
- Conners CK (1985): Inpatient Global Rating Scale (IGRS). *Psychopharm Bull* 21:832–834.
- Epkins CC (1996): Parent ratings of children’s depression, anxiety, and aggression: A cross sample analysis of agreement and differences with child and teacher ratings. *J Clin Psychol* 52:599–608.
- Gadow KD, Sprafkin J (1994): *Child Symptom Inventories Manual*. Stony Brook, NY: Checkmate Plus.
- Geller B, Zimmerman B, Williams M, Delbello MP, Frazier J, Beringer L (2002): Phenomenology of prepubertal and early adolescent bipolar disorder: Examples of elated mood, grandiose behaviors, decreased need for sleep, racing thoughts and hypersexuality. *J Child Adolesc Psychopharmacol* 12:3–9.
- Hinshaw S, Nigg J (1999): Behavior scales in the assessment of disruptive behaviors in childhood. In: Shaffer D, Luchas CP, Richters JE, editors. *Diagnostic Assessment in Child and Adolescent Psychopathology*. New York: Guilford Press, 91–126.
- Humphrey LL (1982): Children’s and teacher’s perspectives on children’s self-control: The development of two rating scales. *J Consult Clin Psychol* 50:624–633.
- Jensen PS, Rubio-Stipec M, Canino G, Bird HR, Dulcan MK, Schwab-Stone ME, Lahey BB (1999): Parent and child contributions to diagnosis of mental disorder: Are both informants always necessary? *J Am Acad Child Adolesc Psychiatry* 38:1569–1579.
- Kirk RE (1995): *Experimental Design: Procedures for the Behavioral Sciences*, 3rd ed. New York: Brooks/Cole Publishing.
- Loeber R, Farrington DP, Stouthamer-Loeber M, VanKammen WB (1998): *Antisocial Behavior and Mental Health Problems*. Hillsdale, NJ: Lawrence Erlbaum.
- Lytton H (1990): Child and parent effects in boys’ conduct disorder: A reinterpretation. *Dev Psychol* 26:683–697.
- Mitsis EM, McKay KE, Schulz KP, Newcorn JH, Halperin JM (2000): Parent-teacher concordance for DSMIV attention-deficit/hyperactivity disorder in a clinic-referred sample. *J Am Acad Child Adolesc Psychiatry* 39:308–313.
- Orvaschel H, Puig-Antich J, Chambers W, Tabrizi MA, Johnson RA (1982): Retrospective assessment of child psychopathology with the Kiddie-SADS-E. *J Am Acad Child Psychiatry* 21:392–397.
- Piacentini JC, Cohen P, Cohen J (1992): Combining discrepant diagnostic information from multiple sources: Are complex algorithms better than simple ones? *J Abnorm Child Psychol* 20:51–63.
- Poznanski EO, Cook SC, Carroll BJ, Corzo H (1983): Use of the Children’s Depression Rating Scale in an inpatient psychiatric population. *J Clin Psychiatry* 44:200–203.
- Rappaport MD, Pataki C, Carlson G (1992): Attention deficit-hyperactivity disorder. In: Van Hasselt VB, Kolko DJ, eds. *Inpatient Behavior Therapy for Children and Adolescents*. New York: Plenum Press, 239–274.
- Reich W, Herjanic B, Welner Z, Gandhi PR (1982): Development of a structured psychiatric interview for children: Agreement on diagnosis comparing child and parent interviews. *J Abnorm Child Psychol* 10:325–336.
- Richters JE (1992): Depressed mothers as informants about their children: A critical review of the evidence for distortion. *Psychol Bull* 112:485–499.
- Ullmann RK, Sleator ER, Sprague RL (1985): Introduction to the use of ACTeRS. *Psychopharm Bull* 21:915–920.
- Weissman MM, Wickramaratne P, Warner V, John K, Prusoff BA, Merikangas KR, Gammon GD (1987): Assessing psychiatric disorders in children. *Arch Gen Psychiatry* 44:747–753.
- Young RC, Biggs JT, Ziegler VE, Meyer DA (1978): A rating scale for mania: Reliability, validity and sensitivity. *Br J Psychiatry* 133:429–435.
- Youngstrom EA, Ackerman BP, Izard CE (1999): Dysphoria-related bias in maternal ratings of children. *J Consult Clin Psychol* 67:905–916.