The Child Bipolar Questionnaire (CBQ)
A Screening Instrument for Juvenile-onset Bipolar Disorder

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In order to address the significant gap in available psychiatric rating scale instruments designed to assess juvenile-onset bipolar disorder symptoms, the Juvenile Bipolar Research Foundation (JBRF) has supported the development of an assessment instrument for this purpose. This scale, called the Child Bipolar Questionnaire (CBQ), is a 65-item behavioral assessment tool. Preliminary data indicate that the CBQ has adequate-to-excellent test-retest and inter-rater reliability characteristics; that it is internally consistent. The instrument is written in simple English (estimated reading grade level = 8), and it may be used with either a parent/parent substitute or a clinician as the assessor. Some preliminary work examining utility and reliability of the instrument when self-administered is quite promising (data to be published). A Spanish-language version is available. Either alone or in combination with other psychiatric rating scales, the CBQ may prove to be an effective screening tool for early-onset bipolar disorder.

Via the Internet-based data collection system of the JBRF, www.bpchildresearch.org), we have assembled data germane to this issue. The JBRF website data collection system has been fully operative since early 2003 and CBQ data, and other diagnostically-useful information have now been assembled on several thousand children/adolescents. For a substantial fraction of the children and adolescents for whom website accounts at the JBRF website have been established, the parents/guardians report that there has been a diagnosis of bipolar disorder previously assigned by a physician (usually pediatrician or child psychiatrist) or other health professional.

The availability of JBRF's large and growing database with information of testable reliability on both psychiatric rating scale data and prior/current bipolar disorder diagnostic status provides a potentially rich opportunity for the development of a screening algorithm designed to identify children/adolescents with a strong diathesis for, or early onset of, bipolar disorder. Accordingly, we assembled CBQ data, and related parent-provided history and current symptoms information via the JBRF's Internet-based data acquisition system.

Psychiatric Rating Scale Characteristics. The CBQ item data are obtained as Likert scale data, with response range 1-4. For the purposes of the analyses, we dichotomized these responses, with 1-2 recoded as zero and 3-4 recoded as 1. The CBQ instrument has an important subscale called the CBQ Core Bipolar Symptoms Subscale, comprising 35 of the 65 CBQ items.

Scoring
Determination of a "probable" diagnosis of childhood-onset bipolar disorder is based on positive endorsement of >40/65 general items at frequencies > 2, or alternatively at least 20/33 core syndromal symptoms (see below).

Results
There were 827 subjects for whom both bipolar diagnostic and CBQ data were obtained via the JBRF internet-based system. For 619 (74.8%) of these subjects, it was reported that a diagnosis of bipolar disorder had formally been assigned at some prior time by a clinician (pediatrician, psychiatrist, or other clinician). Included in this group were 290 girls (35.1%) and 537 boys; average age was 10.6 ± 3.6 years (range 2.2 – 20).

Receiver operating characteristic (ROC) analysis predicting BPD diagnostic status from CBQ total score while adjusting for age and sex, and using a 75% prediction probability as a binary cutoff-point revealed effective predictive capability for the CBQ instrument. With this cutoff, the positive predictive value of the CBQ was 82.8%, with sensitivity = 62.8% and specificity = 61.5%.

Among the CBQ items with the strongest correlations with BPD diagnosis are several that have obvious face validity. For example, the three CBQ items most strongly correlated with bipolar diagnostic status are: Item 62 "Has acknowledged experiencing hallucinations," Item 26 "Has many ideas at once," and Item 31 "Displays abrupt, rapid mood swings." All of these have odds ratios exceeding 2.0.

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2. The Development of The Child Bipolar Questionnaire V. 2.0 – A Diagnostic Screening Inventory for Juvenile-onset Bipolar Disorder. Papolos,, D.& Tresker, S. *Pediatric Bipolar Disorder Conference –March, 2003, Washington, D.C.*

3. Papolos, D.F., & Papolos, J.D. The Bipolar Child: The Definitive and Reassuring Guide to One of Childhood's Most Misunderstood Disorders. Broadway Books, N.Y., December, 2002.

The Bipolar Child Questionnaire Version 2.0
Core Syndromal Symptoms

4) is hyperactive and easily excited in the PM
5) has difficulty settling at night
6) had difficulty getting to sleep
10) craves sweet-tasting foods
24) is easily excitable
25) has periods of high, frenetic energy and motor activation
26) has many ideas at once
27) interrupts or intrudes on others
28) has periods of excessive and rapid speech
29) has exaggerated ideas about self or abilities
30) tells tall tales; embellishes or exaggerates
31) displays abrupt, rapid mood swings
32) has irritable mood states
33) has elated or silly, goofy, giddy mood states
34) Displays precocious sexual curiosity
36) takes excessive risks
43) fidgets with hands or feet
44) is intolerant of delays
45) relentlessly pursues own needs and is demanding of others
47) argues with adults
48) is bossy towards others
49) defies or refuses to comply with rules
50) blames others for his/her mistakes
51) is easily angered in response to limit setting
52) lies to avoid consequences of his/her actions
53) has protracted, explosive temper tantrums

54) has difficulty maintaining friendships
55) displays aggressive behavior towards others
56) has destroyed property intentionally
57) curses viciously, uses foul language in anger
58) makes moderate threats to others or self
59) makes clear threats of violence to others or self
61) is fascinated with gore, blood, or violent imagery

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The Development of The Child Bipolar Questionnaire V. 2.0 – A Diagnostic Screening Inventory for Juvenile-onset Bipolar Disorder

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While there is continuing debate over the validity of the diagnosis of mania in children, a number of systematic clinical investigations and family/genetic studies have begun to shed light on the presentation and naturalistic course of pediatric bipolar disorder (PBD) suggesting a developmentally different presentation in young children as compared to its adult form (Carlson, 1984; Faedda et al., 1995; Wozniak and Biederman; 1997Geller et al., 1998; Papolos and Papolos, 1999; Biederman et al., 2000; Egeland et al.,2000). Adult-onset and juvenile-onset forms of bipolar disorder (BPD) have certain similar features and comorbidities in common, but in the juvenile form of the disorder, the complexities wrought by the frequent overlap of symptoms with other disorders that are far more commonly diagnosed in childhood, has had a confounding affect on clinical diagnostic practice for years (Papolos, 2002).

The development of specific diagnostic criteria that more closely resemble the actual presentation of symptoms and behaviors in childhood, as well as, clinical tools to assist clinicians in the rapid and reliable assessment of children at risk is an important task for clinical research in the upcoming years. Additionally, genetic studies will benefit from the development of well validated, and rapid screening instruments for the large-scale ascertainment of affected sibling pairs that will be required to generate meaningful conclusions when candidate gene and genome wide searches are undertaken in this population.

The Bipolar Child Parent Questionnaire Version 2.0 (CBQ V.2.0), a 65 item questionnaire, has been developed to serve as a rapid screening inventory of common behavioral symptoms, and temperamental features associated with PBD. The first version of the CBQ, version 1.2, contained 85 items, many drawn from DSM-IV categories of childhood psychiatric illnesses. This inventory, as a first iteration, was constructed as a method to determine rates of positively endorsed symptoms for specific age epochs, and scored retrospectively by parents of children diagnosed with PBD by DSM-IV criteria. The most common positively endorsed symptoms were rank ordered according to frequency of occurrence (scores > 60%), and of these, the 65 highest ranked symptoms and behaviors were included in the CBQ Version 2.0.

Survey and Child Bipolar Parent Questionnaire Instrument (CBQ)

This CBQ 1.2 inventory was administered along with a survey that consisted of 35 questions that assessed demographics, premorbid symptoms and behaviors, family psychiatric and substance abuse history, treatment response, as well as an 85 item checklist that recorded parents retrospective reports of symptoms and behaviors in chronological two- year age epochs from birth to age 20. 70 of 85 items from the behavioral checklist were drawn from the DSM-IV diagnostic categories for childhood and adult psychiatric disorders that define criteria for: separation anxiety disorder, generalized anxiety disorder, phobias, obsessive compulsive disorder, oppositional defiant disorder, conduct disorder, attention-deficit disorder, major depression and bipolar disorder. Additionally, because several clinical studies reported on juvenile-onset cases (Papolos et. al. 1996; Wozniack et al, 1995; Geller et al,1998;) have found a predominance of rapid and ultra-ultra rapid cycling variants, the frequency of mood cycles was evaluated by additional items which asked parents to rate mood variations occurring at hourly intervals (one and six hours and greater than six hours were included), as well as through a visual display illustrating six different possible cycling patterns. Follow-up telephone interviews were conducted with parents to validate and enlarge upon the survey responses.

Demographic and Phenomenological Characteristics

The sample comprised all children and adolescents (n=210), ages 5.4-18.8

yrs., consecutively referred over a 36 month period (11/1999 - 11/2002) to the practice of one of the authors (DFP). The mean age 10.2 yrs. 61.6% were male Each diagnostic evaluation involved separate interviews with children and one or both parents. For every diagnosis, information was gathered regarding ages of onset and offset, number of episodes and treatment history. A full 82.9% of the sample had some psychiatric symptoms by 6 years of age, 79% at or prior to the age of 4, and 54% by age 2 or earlier. 52.1% had been seen at least once by a mental health professional by the age of 5, 88% by age 11, and almost the entire sample (99.1%) by age 16. 72**%** of the sample was diagnosed with bipolar disorder – NOS, 15% with BP I and 13% BP II. 86.3% had at least one previous DSM-IV diagnosis.

Diagnostic Criteria

To be given a lifetime diagnosis of mania, the child had to meet full DSM-IV criteria for a manic episode with associated impairment. Thus a child must have met criteria A for a period of extreme and persistently elevated or irritable mood, plus criteria B; manifested by three (four if mood is irritable only) of seven symptoms during the period of mood disturbance. To be diagnosed with BP-NOS the child must have had distinct periods of abnormally, elevated, expansive or irritable mood, most of the day, nearly every day for repeated periods (a minimum of 5 such episodes) for at least 2 days as indicated by either subjective report or observations made by others, and during the period of mood disturbance have 3 or more of the following symptoms present to a significant degree (4 if the mood is only irritable); inflated self esteem or grandiosity, decreased need for sleep, more talkative than usual or pressure to keep talking, flight of ideas or subjective experience that thoughts are racing, distractibility, increase in goal-directed activity or psychomotor agitation, excessive involvement in pleasurable activities that have a high potential for painful consequences.

In the BP-NOS group, marked variations in mood and energy were present and were characterized by abrupt, rapidly alternating levels of excitability, emotional lability, and motor activity. A large majority of cases experienced chronic irritable mood states with a superimposed diurnal pattern of irritable mood states in the morning on arising, associated with decreased energy and low activity, followed by intense, rapid shifts of mood throughout the day with intensification in the PM of irritable or elated/euphoric (silly, goofy, giddy) mood states, as well as, early insomnia, and middle of the night arousals. A majority of cases exhibited a low tolerance for frustration in situations that required sustained attention, interest and effort which was manifest by difficulties with postponement of immediate gratification, such as waiting one’s turn, or denial of expressed needs, as well as, changes in planned activities, established routines, or making required transitions from one context to another. This deficit, combined with poorly regulated attentional focus, often resulted in maladaptive responses, such as seeming not to listen, interrupting or intruding on others, and disruptive,

oppositional/defiant, and provocative behaviors, or -- in the extreme -- temper tantrums and aggressive rage attacks, often followed by sullen withdrawal and expressions of remorse. Episodes of anger dyscontrol, temper tantrums, rages, often of more than half an hour in duration, occurred spontaneously, but were most often precipitated by limit setting attempts by parents or other authority figures, and were commonly associated with the use of profane language and/or the expression of physical violence. The typology of rapid cycling of fast frequency in these patients was of the type described by Kramlinger and Post (1995), who performed extended in-patient psychiatric evaluations that included longitudinal assessments, retrospective life charting and prospective assessment of daily mood by self and blinded observer ratings to describe this variant of the condition in adults.

Results

We describe the development of this inventory, and the development of a validation study that will use a newly developed companion diagnostic interview schedule to be conducted in a group of 100 children with BPD by diagnosed DSM-IV criteria, 50 control children with no psychiatric diagnoses, and 50 subjects with attention-deficit disorder with hyperactivity. After further validation in a larger sample the CBQ V. 2.0 may provide a useful screening instrument that can be used by pediatricians, and mental health practitioners, as well as, for family genetic and offspring studies. We want to assess the ability of this instrument to satisfy three prerequisites for use in such clinical and research settings: (1) identification of core symptom categories related to bipolar disorder (2) use with children and young adolescents, and (3) ability to distinguish between affected and well siblings and control subjects with attention-deficit disorder with hyperactivity.

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