Diagnostic Challenges in Children and Adolescents With Psychotic Disorders

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The diagnosis of psychotic disorders in children and adolescents is often complex and challenging. The symptomatic overlap between different psychotic conditions and other emotional, behavioral, and developmental disorders has led to high rates of misdiagnosis, especially at time of onset. The clinical expression and progression of diagnosable disorders are affected by maturational processes. Thus, psychotic illnesses in pediatric patients may vary from adult presentations because of developmental factors. Establishing a specific diagnosis is difficult when the differential diagnosis comprises disorders that share common symptoms and are frequently comorbid. The clinical assessment depends as much on input from parents and teachers as from the patients themselves, and there may be conflict between these different perceptions. This article reviews recent research and current concepts relating to diagnostic challenges in pediatric psychiatry.   *(J Clin Psychiatry 2004;65[suppl 6]:5–11)*

Clinicians face many challenges when evaluating a child for a psychotic illness. Most children who exhibit psychotic-like symptoms do not have a true psychotic disorder.[1–3] Of those who do, high rates of misdiagnosis are noted during the initial presentation.[4] Furthermore, mentally ill young people, regardless of diagnosis, often present with multiple complex syndromes with overlapping symptoms and confounding risk factors, such as traumatic experiences and child maltreatment. Thus, sorting out presentations specific to psychosis from those more commonplace in emotionally disturbed youngsters can be difficult. A careful and accurate diagnostic assessment is essential because successful intervention is often predicated on an accurate formulation. This article reviews some important sources of potential diagnostic uncertainty in pediatric patients with psychotic illnesses.

Several factors contribute to the difficulty in accurately assessing psychotic symptoms in pediatric patients. Psychotic symptoms are inherent components of recognizable syndromes that have characteristic clinical presentations.

Unlike many symptoms of childhood psychopathology, such as oppositional behavior or inattention, psychotic symptoms are not on a continuum with what might be considered normal phenomena. True psychosis is a serious mental illness and mandates careful assessment and treatment. The differential diagnoses include schizophrenia, psychotic mood disorders, schizoaffective disorder, and organic psychoses due to other medical syndromes or psychoactive substances. Less common in children are delusional disorders and brief reactive psychosis. Although the term *psychosis not otherwise specified* (NOS) is commonly used in clinical settings, it is not a clinical condition but simply the absence of sufficient symptoms to make a more definitive diagnosis.

DIAGNOSTIC ASSIGNMENT

Young people with psychotic illnesses are often misdiagnosed, especially at the initial presentation.[4–7] Misdiagnoses are likely because of a number of factors, including the overlap in symptoms between the different syndromes, lack of clinician familiarity with psychotic illnesses in youths, and probably clinicians' unwillingness to use more ominous labels such as schizophrenia. During the early phases of psychotic illnesses, it may be difficult to distinguish the developing psychotic symptoms from other more common symptoms of childhood psychopathology. Schaeffer and Ross[8] found that, on average, children and adolescents diagnosed with schizophrenia or schizoaffective disorder (N = 17) suffered with their conditions for more than 2 years before a correct diagnosis was made. Parents were aware of problems, especially at school (e.g., defiance, aggression, mood swings), before overt psychotic symptoms emerged. Many of the children had been

initially diagnosed as having developmental delays, learning disabilities, bipolar disorder, disruptive behavior disorders, obsessive-compulsive disorder, major depressive disorder, generalized anxiety, tics, and social phobia and had received a variety of different interventions before being prescribed antipsychotic medications.

Overlap in symptoms between different psychotic illnesses is a major contributor to misdiagnosis. In a study using factor analysis to examine the specificity of symptoms in youths with early-onset psychotic disorders (either schizophrenia, bipolar disorder, or psychotic disorder NOS, N = 69),[9] subjects in the schizophrenia group showed significantly higher scores on measures of negative symptoms. There were no between-group differences in measures of positive symptoms, behavioral problems, or dysphoria (although dysphoria scores were worse in girls). Thus, although positive symptoms are the hallmark characteristic of schizophrenia, negative symptoms were the most specific indicators of the illness. Mood symptoms are common with schizophrenia and delusions and thought disorder are common in adolescents with mania. Behavioral problems and dysphoria were found across all of the disorders and were better predictors of functioning and severity than diagnosis.

Given this overlap in symptoms, it is not surprising that a substantial number of young people first diagnosed with schizophrenia have other disorders, including bipolar disorder[7] and personality disorders.[10,11] Conversely, youths with schizophrenia may be misdiagnosed as having a psychotic mood disorder, in part because dysphoria is often part of the prodromal phase[9] and also presumably because of the treating clinician's hope that mood disorders portend a better prognosis and treatment response.

Another problem is that schizoaffective disorder, which is now commonly diagnosed in community settings, appears to be a somewhat unreliable diagnosis.[7,12] The criteria defining schizoaffective disorder require distinct periods of psychotic symptoms that occur independently from predominant mood episodes. Yet the term is often used to describe either schizophrenic patients with mood symptoms or youths with active psychosis in the context of a mood disorder. Moreover, many youths with severe emotional and behavioral dysregulation problems exhibit psychotic-like phenomena and thus are characterized as schizoaffective. However, their psychotic symptoms may be atypical and associated with chaotic social or abuse histories.[6] It is likely that these cases will turn out to have borderline or other personality disorders in follow-up studies of early-onset psychotic illnesses.[4,10,11]

Furthermore, many pediatric patients have developmental oddities that do not fit well within any of the current diagnostic schema. These young people may be described as having childhood schizophrenia, yet they do not display sufficient psychotic symptoms to meet criteria for the disorder. Most young people referred to a national study of childhood schizophrenia did not have the disorder but instead displayed a mixture of developmental delays, mood lability, and subclinical psychotic symptoms.[13] Over time, most youths with atypical psychotic symptoms do not develop more overt psychotic disorders.[12,14]

Thus, the high rates of misdiagnosis noted at the onset of juvenile psychotic illnesses are most likely due to several factors, including an overlap in illness presentation, evolving subclinical psychotic symptoms, and the confounding occurrence of other psychiatric comorbidities. The use of standardized diagnostic practices and adherence to the criteria appear to improve accuracy.[15] However, although some of the problems with misdiagnosis probably reflect lack of clinician familiarity or idiosyncratic practices, it also remains evident that many cases are difficult to accurately characterize until enough time has passed to provide a clear pattern of the illness. Adding to this dilemma is a tendency for the current diagnostic system to focus more on point-in-time symptom criteria than the broader history of the presenting illness. Young people with possible psychotic symptoms should be carefully monitored longitudinally, with periodic reassessments, to help ensure accuracy of diagnosis.

Characteristics of Psychotic Symptoms in Juveniles

Although the same diagnostic criteria are used to diagnose psychotic illnesses in adults and juveniles, the clinical manifestations of a given condition in pediatric patients may vary. For example, adults with schizophrenia often experience systemic delusional beliefs (e.g., organized delusions about government plots), whereas these are less common in youths.[16] In general, youths are more likely to experience hallucinations and negative symptoms and less likely to demonstrate more organized delusional beliefs or catatonia.

Conversely, reported developmental variations in illness presentation raise questions as to whether the condition being diagnosed in young people is in fact continuous with the adult form. An example is the current controversy regarding whether the presentation of bipolar disorder in adults (discrete symptomatic episodes separated by periods of normal function) versus that described in youths (more continuous rapid cycling and mixed-state symptoms)[17,18] represents the same continuous form of illness. One difficulty is how to apply adult diagnostic criteria to youths while accurately taking into account developmental modifications.

Psychotic symptoms are relatively rare in juveniles, especially in children younger than 12 years of age. Therefore, before assigning a psychotic disorder diagnosis, the clinical picture should be supported by other associated symptoms and presentation. Psychosis does not occur in isolation, and reported symptoms in the context of an otherwise normal mental status examination warrant skepticism. Hallucinations and delusions are generally accom-

panied by thought disorder, bizarre psychotic behavior, or responses to internal stimuli. The onset of a psychotic illness is typically related to deterioration in functioning. Different disorders have classic presentations. Schizophrenia often has a more insidious prodromal phase than other psychotic disorders, characterized by an increase in social withdrawal, bizarre idiosyncratic behaviors, and decline in functioning. Conversely, bipolar disorder, as classically defined in the adult literature, is a cyclical disorder, characterized by marked changes in psychomotor functioning, sleep, and mental status during mood episodes. The overall pattern of illness presentation needs to be assessed before determining a diagnosis.

Psychotic-Like Symptoms in Nonpsychotic Youths

Clinicians unfamiliar with normal child developmental processes may misconstrue common mental and emotional states as representing psychoses. Young children may demonstrate fantasy beliefs and play that are potentially misinterpreted as delusional when judged by adult standards. For example, an adult who believes he will become a famous athlete despite the lack of abilities may be experiencing a grandiose delusion. An 8-year-old who dreams of growing up to be an All-Star despite sitting on the bench in Little League is enjoying the eternal hope of childhood. Although the same criteria are used for diagnosing psychotic illnesses in juveniles and adults, developmental considerations must be made when interpreting symptoms.

Because children usually have no experience or knowledge of psychotic phenomena, they may misunderstand questions during a psychiatric interview. In a study examining the validity of structured interviews, questions regarding rare phenomena, including psychotic symptoms, had the highest rate of false positives.[19] Children may assume that the adult is inquiring about a commonplace phenomenon and answer accordingly. Normal human thought and memory processes include hearing internal voices and experiencing false beliefs. Therefore, simply because children answer affirmatively to a question regarding hallucinations or delusions does not automatically mean they are psychotic.

Discriminating psychotic illnesses is even more difficult when other psychiatric disturbances or learning difficulties are present. Developmental or cognitive delays may be mistaken for thought disorder. Youths with conduct and other nonpsychotic emotional disorders may report psychotic-like symptoms and thus be inaccurately diagnosed with a primary psychotic disorder.[1–4,12,20] Children with histories of abuse and neglect, including those with posttraumatic stress disorder, often describe psychotic-like symptoms.[21] These reports of psychotic-like phenomena may actually represent dissociative or anxiety symptoms, including intrusive thoughts and worries, derealization, and depersonalization.[12,20,22]

Atypical psychotic-like symptoms, such as those often reported by children with a history of maltreatment, often are qualitatively different than symptoms associated with psychotic illnesses. The validity of psychotic symptoms should be questioned when (1) the reports are inconsistent and there is no other documented evidence of a psychotic process; (2) the qualitative nature of the reports is not typical of psychotic symptoms, for example, greatly detailed descriptions or reports more suggestive of fantasy or imagination; and (3) the reported symptoms occur only at specific times or are clearly reinforced by environmental circumstances, for example, hearing voices only after an aggressive outburst.[6] Of course, young people with psychotic disorders may also report atypical symptoms, so distinguishing symptoms qualitatively is not always easy.

PSYCHIATRIC COMORBIDITY

Apart from the effects of ongoing growth and development in children and adolescents and the potential confusion between psychiatric conditions with similar symptoms, diagnosis in pediatric patients may be confounded by the presence of comorbid psychiatric conditions. Application of the current diagnostic system potentially adds to this confusion by using narrowly defined categories that may or may not represent discrete biological entities. For example, historical descriptions of attention-deficit/hyperactivity disorder (ADHD) have included observations of moodiness and irritability. However, since these symptoms are not part of the diagnostic criteria for ADHD, their presence is sometimes defined as a separate mood disorder. It is unlikely that the various common problems of childhood (e.g., irritability, moodiness, inattention, impulsiveness, aggression) are truly manifested as a series of distinct independent categories. However, until underlying pathophysiologic mechanisms are identified, the current nosology represents our best efforts at classification.[23]

Comorbid Behavioral Problems

Behavioral disturbances are common in youths with primary psychotic illnesses.[9] Premorbid and concurrent behavioral disorders, including ADHD, oppositional defiant disorder, and conduct disorder, are noted in young people with schizophrenia, bipolar disorder, and schizoaffective disorder.[9,24,25] Although current practices often equate behavioral dysregulation with mania, behavior problems do not predict one psychotic illness over another.[9]

Comorbid Substance Abuse

Dual diagnosis (psychiatric conditions plus comorbid substance abuse) represents an enormous clinical challenge in terms of both diagnosis and therapy. The effects of substance abuse can mimic, distort, or exacerbate the

Table 1. Selected Diagnostic Instruments Used for General Assessment of Psychiatric and Functional Status in Pediatric Patients

Tool	Description
Child and Adolescent Psychiatric Assessment[36]	Structured interview focusing on symptoms occurring during the preceding 3 months; versions available for clinical and epidemiologic research
Children's Psychiatric Rating Scale[37]	Measures medication effects on symptom clusters (eg, hyperactivity, aggression, hostility); each item rated for severity of symptoms
Children's Global Assessment Scale[38] (adapted from adult Global Assessment Scale)	Measures overall severity of disturbance on a 100-point scale spanning most severe functional impairment to normal function
Vineland Adaptive Behavior Scale[39]	Assessment of behavior on subscales for social function, communication, daily living skills, motor function, and maladaptive behavior
Diagnostic Interview for Children and Adolescents[40]	Matching structured interviews for child and parent based on DSM-III criteria in 18 diagnostic categories
Diagnostic Interview Schedule for Children, Version 2.3[41]	Comprehensive structured interview from National Institute of Mental Health, requiring 1 hour; versions for use with patient or parent
Social Adjustment Inventory for Children and Adolescents[42]	Semistructured interview with focus on 77 items relating to child's experiences at school, spare time activities, peer relations, home life

symptoms of psychotic disorders. Substance abuse can also compromise social functioning and compliance with treatment, resulting in an increased risk of relapse.

Studies show that as many as one third or more of adolescents with schizophrenia or schizoaffective disorder have problems with substance abuse.[12,26] Those with substance abuse are more likely to fail at school, to come from a dysfunctional family, and to use hospital services. Kutcher et al.[26] found that the diagnosis of schizoaffective disorder was significantly more common in dual-diagnosis patients. In a study of 232 patients of all ages with first-episode schizophrenia, alcohol and cannabis use were both common problems.[27] Early onset of psychosis (before age 20) and being male were significantly associated with increased risk.

The relationship between the timing of the development of substance abuse with the onset of psychosis raises questions regarding causal relationships between the 2 entities. In a study of 79 undergraduate students with self-reported high- or low-level use of cannabis, those at highest risk for psychosis were more likely than other subjects to report unusual or adverse experiences rather than pleasure from cannabis use. Moreover, there was no increase in use after psychotic experiences.[28] In a related study in 571 female undergraduates, self-reporting by questionnaire established that both positive and negative psychotic symptoms were independently associated with cannabis use but depressive symptoms were not. Alcohol use did not alter the expression of any psychotic symptoms.[29] However, these issues are complex and interactive, with each probably adding to the risk of the other. Further complicating the issue is the fact that the peak ages of onset of psychotic illnesses coincide with the highest risk periods for substance abuse.

Substance abuse is also commonly present in youths with bipolar disorder. In a study of 86 adolescents with bipolar disorder, the age at onset showed significant correlation with the risk of substance abuse.[30] The risk of substance abuse was almost 9 times as high in patients with adolescent onset as in those with childhood onset, independent of the presence of any comorbid behavioral or anxiety disorder.

CHILDHOOD MALTREATMENT

Histories of abuse and neglect are commonly found in youths with serious mental health disorders, including psychotic illnesses. One challenge is to sort abuse-related posttraumatic phenomena from true psychosis. Some individuals will have both.[6] Abuse and neglect are risk factors for the later development of borderline personality disorder, which includes brief psychotic symptoms as part of its diagnostic criteria. Therefore, sorting out these different conditions is important, although the complicated clinical presentations may be a challenge. It is therefore not surprising that some long-term follow-up studies have found that youths originally diagnosed with schizophrenia turned out to have personality disorders as adults.[4,10,11]

Psychotic symptoms tend to be more severe in adults with schizophrenia and a history of childhood sexual abuse than in other patients with schizophrenia.[31] Histories of sexual abuse were associated with poorer scores on several quality-of-life measures. Most of the patients in this study were men. Therefore, although these findings may not apply to gender-balanced or predominantly female populations, it is reasonable to suspect that the long-term effects of childhood sexual abuse can contribute to comorbid depression and disruptive behavioral problems, both of which complicate diagnosis and intervention.

ASSESSMENT IN PEDIATRIC PSYCHIATRY

The diagnosis of psychiatric conditions in pediatric patients depends in part on information provided by parents and teachers. Adults are more likely to report unacceptable behavior, whereas children are more likely to dwell on their own subjective feelings of anxiety or depression.[32] Moreover, the perceptions of parents and teachers may differ, especially with regard to abnormalities that are seen only or predominantly at home or at school.

Table 2. Selected Diagnostic Instruments Used to Establish Specific Psychiatric Diagnoses or to Assess Severity and Course Over Time

Tool	Description
Serial measurements in various disorders	
Clinical Global Impressions Scale[37]	Scales measure severity of diagnosed disorder, global improvement, medication effects; eg, global improvement ratings 1 to 7 represent very much improved to very much worse compared with baseline
Schizophrenia	
Kiddie PANSS (modification of adult Positive and Negative Syndrome Scale)[43]	Structured and semistructured interview on 30 items (7 positive symptoms and 7 negative symptoms rated for severity, plus 16 general psychopathology items as control scale)
Kiddie SADS (modification of adult Schedule for Affective Disorders and Schizophrenia)[44]	Semistructured interview focusing on symptoms relating to affect, anxiety, conduct, and psychosis
Mood disturbances	
Mania Rating Scale (also known as Young Mania Rating Scale)[45]	Interview to assess severity of 11 items (relating to mood, energy, sexual interest, sleep, irritability, speech, language, content, behavior, appearance, and insight), each rated on an ordinal scale
Children's Depression Inventory (adapted from Beck Depression Inventory, for ages 7–17)[46]	Self-report on 27 items relating to recent negative mood, interpersonal problems, feelings of ineffectiveness, anhedonia, poor self-esteem
Children's Depression Rating Scale[47]	Similar to Hamilton Rating Scale for Depression for adults, with multiple items rated for severity
Behavioral problems	
Child Behavior Checklist[48]	Filled out by adult who knows child; assesses 112 items on 12 scales (9 clinical, 3 social-function)
Aberrant Behavior Checklist[49]	58 symptoms rated by informant (eg, parent) on subscales for irritability, lethargy, stereotypy, hyperactivity, and inappropriate speech
Self-Injurious Behavior Questionnaire[50]	25 items rated by clinician to assess self-injurious behavior, aggression, hyperactivity, moodiness, anger, etc; items rated on ordinal scale of severity
Overt Aggression Scale[51]	Checklist of typical examples of verbal and physical aggression against self, other people, and objects
Suicide and Aggression Survey[52]	Interview tool to assess potential for suicide or violence based on recent or past history of suicidal or violent thoughts, gestures, and actions
Social Dysfunction and Aggression Scale[53]	Clinician ratings on severity of verbal aggression, irritability, negativism, dysphoria, socially disturbed behavior, physical violence (against others, self, or objects), and suicidal thoughts
Developmental disabilities	
Behavior Problems Inventory[54]	Assesses 52 items relating to self-injury, stereotypic behavior, and aggression on scales of frequency and severity
Nisonger Child Behavior Rating Form[55]	71 behavioral items rated by parents and teachers for frequency and/or severity
Obsessive-compulsive symptoms	
Children's Yale-Brown Obsessive-Compulsive Scale[56]	Version of Yale-Brown scale for adults; obsessions and compulsions each rated in 5 areas (time spent on symptoms, control, interference with normal function, resistance, distress)
Leyton Obsessional Inventory-Child Version[57,58]	44 statements describing typical obsessive-compulsion symptoms; agreed-to items rated for resistance and interference; yields significant distinction from normal controls, less distinct from nonobsessive psychiatric controls
Autism	
Childhood Autism Rating Scale[59]	Assesses severity of 15 characteristic features to establish diagnosis
Ritvo-Freeman Real-Life Rating Scale[60]	Assesses frequency of 47 symptoms organized into 5 subscales (sensory-motor activity, social relationships, affectual response, sensory response, use of and response to language)
Autism Diagnostic Interview[61]	Interview to rate social interaction, communication, and stereotypic or repetitive behavior; used with diagnostic algorithm based on ICD-10 criteria
Autism Diagnostic Observation Schedule[62]	Presentation of 8 tasks; patient's reactions rated on ordinal scale (normal, possibly abnormal, abnormal)
Substance abuse	
Adolescent Drug Involvement Scale[63]	Self-administered checklist of drug-related behavior and frequency of use of different types of drugs
Adolescent Drug Abuse Diagnosis instrument[64]	Structured interview covering 150 items rated on a scale of severity
Alcohol Expectancy Questionnaire, Adolescent Form[65]	Self-administered questionnaire reviewing 90 items relating to positive and negative expectations with alcohol use
Other conditions	
Childhood Sexual Trauma Questionnaire[66]	Yes-no responses to questions about childhood experiences with adults (self-exposing, touching genitals, threatened or actual intercourse)
Diagnostic Interview for Borderlines[67]; revised version assessed in young patients[68,69]	Review of 24 symptoms in 5 areas (social adaptation, impulsivity, affect, psychosis, interpersonal relationships)
Yale Global Tic Severity Scale[70]	Assesses motor and phonic tics for number, frequency, intensity, complexity, and interference

Abbreviation: ICD-10 = International Classification of Diseases, 10th edition.

Clinical assessment involves far more than attaching the name of a disorder to the patient's record based on the current diagnostic criteria. A comprehensive assessment addresses the patient's developmental, psychosocial, and medical history and incorporates historical reports with observations from the mental status examination as well as the functional impact of the psychiatric symptoms.

Standardized diagnostic tools (structured interview forms, symptom checklists, severity rating scales) play a potentially important role in the clinical setting and in research. Some of these tools assess the patient's general psychiatric or functional status; others focus on factors and features associated with a specific diagnosis. Some standardized diagnostic tools are designed for speed and ease; others require more time. Some standardized diagnostic tools are designed to be used by physicians and others by patients, their parents, or their teachers. Finally, some diagnostic tools are designed specifically for use in children and adolescents; others are not specific to any age group. With all of these standardized diagnostic tools, the overall goal is to reduce interclinician variability and thus improve diagnostic accuracy, but there are inherent drawbacks and limitations associated with any standardized diagnostic tool.

For example, in contrast to unstructured history taking, structured interviews offer a consistent method of assessing suspected psychiatric problems in children. However, they may be time consuming and burdensome to both interviewer and patient. Similarly, symptom rating scales provide a convenient approach to quantifying severity. They are used primarily to assess symptom presentation over time and to examine the impact of treatment. Thorough reviews of the various instruments and scales are available.[23,33]

Symptom checklists and rating scales complement but do not replace the clinical interview. It has also been suggested that the validity of some of the assessment tools used for children and adolescents has not been conclusively established.[34,35] On the other hand, standardized assessment tools have much practical value when used correctly and consistently. The use of structured diagnostic interviews has been shown to improve diagnostic accuracy in psychotic disorders in juveniles and young adults.[12,15]

Table 1 lists selected representative instruments used to assess general psychiatric and functional status in pediatric patients. Table 2 lists instruments used to screen for specific psychiatric diagnoses or to assess their severity and clinical course over time.

CONCLUSIONS

Psychotic illnesses in children and adolescents are diagnosed by using the same criteria as those used to diagnose illnesses in adults and appear to be continuous with the adult-onset forms. Misdiagnosis at the time of onset is common, in part because of overlapping symptoms across syndromes and in part because of the confusion between true psychosis and other suggestive symptom reports related to developmental or posttraumatic phenomena. Other confounding issues, such as comorbid substance use or behavioral disorders, developmental delays, and complicating psychosocial stressors, add to the diagnostic complexity. A comprehensive assessment is required, with attention to the qualitative nature of symptom reports, pattern of illness, and overt evidence of psychotic functioning. Structured diagnostic instruments may be useful, but in clinical practice they are often viewed as being too time consuming. Although psychotic illnesses are relatively rare in youths, especially younger children, these disorders are not uncommon in clinical settings and must be considered in the evaluation of every individual patient.

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