The study of pediatric catatonia supports a home of its own for catatonia in DSM-5
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The study of pediatric catatonia has not received much attention. During the last few years, progress has been made in delineating this syndrome in children and adolescents across a wide range of disorders. Catatonia is a potentially life-threatening but treatable syndrome that also occurs in children and adolescents with autistic, developmental, and tic disorders, and in its idiopathic form. In many of these cases, catatonia cannot be accounted for by an associated psychotic, affective, or medical disorder. These findings are imminently relevant for classification where catatonia is currently restricted to sections of the psychotic, affective, or medical disorders. Catatonia should always be the primary diagnosis in children, adolescents, and adults, as specific treatments for catatonia, i.e., benzodiazepines and electroconvulsive therapy, lower risk of worsening catatonia or precipitating Neuroleptic Malignant Syndrome when antipsychotic medications are used as first-line or sole treatment. The creation of a separate diagnostic class for catatonia is the safest approach to ensure proper diagnosis and treatment of this syndrome in patients of all ages and the best approach to promote research.

Introduction
Catatonia is a psychomotor syndrome, characterized by motoric immobility sometimes alternating with excessive motor activity (that is apparently purposeless and not influenced by external stimuli), extreme negativism or mutism, peculiarities of voluntary movement, or echolalia or echopraxia. Catatonia was originally described in adults by Kahlbaum in 1874 as a unique syndrome [1]. Kraepelin incorporated catatonia as a type of schizophrenia [2] although subsequent studies have shown that the syndrome occurs in adult patients with psychotic, affective, drug-induced, and medical disorders [3,4]. Unfortunately, catatonia remains erroneously perceived as uniquely associated with schizophrenia [5]. Benzodiazepines and electroconvulsive therapy (ECT) relieve catatonia in most instances. Associated conditions may require different and additional treatments.

One of the most important changes for clinical practice in the future DSM-5 concerns the further separation of catatonia from schizophrenia [6]. Catatonia is currently found in several categories of DSM-4 [7], and this may add to diagnostic confusion and poor selection of effective treatment for catatonia. First, catatonia due to a general medical condition (code 293.89) is listed as a distinct entity in the section on medical conditions. Second, the catatonia subtype of schizophrenia (code 295.20) is one of the original Kraepelinian forms of schizophrenia listed since the first DSM edition in 1952. Third, catatonia is an episode specifier for depressive disorders, mood disorders, and to classification problems in schizophrenia given their historical associations.

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The recommendations of the DSM-5 Psychosis Work Group have recently been posted on-line (www.dsm5.org, accessed on 14 April 2010). The Work Group aims to improve the recognition, treatment, and study of catatonia. The creation of a new diagnostic class for catatonia with specifiers for comorbid conditions versus the use of specifiers in the psychotic, affective, and medical disorders are offered as options. The Work Group finds catatonia primarily linked to schizophrenia and antipsychotic medications not contraindicated in catatonia. The creation of a new diagnostic class in the psychoses chapter for catatonia is not supported. Instead, the use of catatonia specifiers in the psychotic, affective, and medical disorders is favored, thereby eliminating the traditional catatonic subtype of schizophrenia (295.2) and the freestanding catatonic disorder due to a general medical condition not elsewhere classified (293.89), leaving catatonia uncoded.

**Pediatric catatonia**

The recommendations of the Work Group are not consistent with findings in pediatric catatonia [13,14]. Pediatric studies [15–22] listed in Table 1 and two case-vignettes [23,24] show catatonia to be a treatable syndrome that is hidden in plain sight across a wide range of disorders. Adolescents with schizophrenia and affective disorders have a 60-fold increased risk of premature death, including suicide, when compared to the general population of same sex and age [25]. Various medical-neurological disorders and substance-induced conditions are associated with pediatric catatonia requiring different and additional treatments [26–28].

Catatonia also occurs in children and adolescents with autistic [15,20,22,24,29–44], developmental [45–48], and tic disorders [49,50], and in its idiopathic form [23,51–56]. In many of these cases, catatonia cannot be accounted for by an associated psychotic, affective, or medical disorder. There are risks in severe morbidity and mortality of acute catatonia when not promptly recognized and treated as catatonia may worsen or Neuroleptic Malignant Syndrome may ensue when prescribing antipsychotic medications as first-line or sole treatment [57–62].

### Case of adolescent malignant catatonia in autism [24]

A 15-year-old male with high-functioning autism developed gradual onset of slowness, loss of verbal skills and delayed task completion followed by development of rigidity, posturing, waxy flexibility and negativism in the forms of food refusal and urinary retention. Psychiatric assessments revealed no evidence of affective or psychotic pathology, and the boy’s symptoms were attributed to autism and mental retardation after thorough evaluations. A diagnosis of catatonia was finally made after 10 months of frank catatonic symptoms, at which point the patient required constant cardio-respiratory monitoring because of severe autonomic instability. His parents’ insurance carrier initially denied coverage for ECT stating that he had neither a psychotic nor affective illness. ECT was nonetheless pursued, and all catatonic symptoms remitted. Exhaustive subsequent psychiatric evaluations failed to reveal any hint of affective or psychotic pathology. This patient presented with malignant catatonia alone, and lack of rapid diagnosis and treatment nearly cost him his life.

### Implications

A new diagnostic class for catatonia, such as catatonia not otherwise specified (NOS), is warranted in order for catatonia to be diagnosable in children and adolescents without a comorbid diagnosis of schizophrenia, affective disorder, or medical disorder. Such a classification would also prevent premature closure on evolving research on pediatric catatonia in autistic, neurodevelopmental, and tic disorders, and of idiopathic catatonia.

Where should catatonia NOS be placed? The safest solution to be the creation of a separate catatonia class (with own code) with specifiers for associated psychotic, affective, medical, and toxic conditions; a home of its own for catatonia, as originally proposed by Taylor and Fink [11]. Taking catatonia out of schizophrenia and psychosis may pose problems for the classification of schizophrenia given their traditional associations [2,12] but this should be balanced by the benefits of increased safety and decreased complications. This would best serve catatonia research as there is no indication that a significant number of schizophrenia or psychosis researchers are wedded to studying catatonia [63]. The proposal of Taylor and Fink seeking independent status of catatonia should be amended to include a catatonia NOS specifier allowing proper diagnosis of pediatric catatonia in various disorders (especially the autistic and neurodevelopmental disorders).
outside the major psychotic, affective, and medical disorders. The creation of a new catatonia class with specifiers for associated conditions as well as for catatonia NOS seems the safest and best approach. Mention should be made that there is a severe form of catatonia, i.e., malignant catatonia, characterized by fever and autonomic disturbances, that the onset can be acute or gradual, and the course chronic or episodic [3,4].

Conflict of interest statement
None declared.

References