

Differences between *DSM-IV* and *DSM-5* as applied to child and adolescent psychiatry and neurodevelopmental disorders

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Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-5) was published by the American Psychiatric Association in 2013. We discuss the important differences between *DSM-IV* and *DSM-5* with particular relevance to child and adolescent psychiatry. The *DSM-5* diagnostic criteria for a diagnosis of autism spectrum disorder and of attention-deficit/hyperactivity disorder are discussed in detail, as well as a summary of other changes in *DSM-5* relevant to child and adolescent psychiatry. The discussion is supported by a review of relevant literature.

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Introduction

We aim to compare the *Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV)* and *DSM-5*, and to highlight new aspects of *DSM-5* which are of particular relevance to child and adolescent psychiatrists in Ireland. This paper should be read in conjunction with the paper on *Differences between DSM-IV and DSM-5 as applied to general adult psychiatry*, by Murphy and Hallahan, 2016. We recommend also that the reader refers to a copy of the *DSM-5* or the desk-reference to the *DSM-5* while reading this article. The *DSM-IV* is well known by most child psychiatrists in Ireland, and was published in 1994 by the American Psychiatric Association (American Psychiatric Association, 1994) after years of research to modify and remove the inconsistencies from *DSM-III*. *DSM-IV-TR* (text revision) was later published in 2010. The APA worked with the developers of ICD-10 to increase the congruence between two systems.

The *DSM-5* published in May 2013 by APA (American Psychiatric Association, 2013) has created considerable change from *DSM-IV* in relation to how disorders are diagnosed or listed as present or absent. The multi-axial classification system we are familiar with in *DSM-IV* has been replaced with a non-axial system, where multiple disorders or conditions can be diagnosed simultaneously, with the most prominent disorder usually listed first. In *DSM-IV* we have used Axis I Clinical Disorders, Axis II Personality Disorders and Mental Retardation, Axis III General Medical Condition, Axis IV Psychosocial and Environmental Problems and Axis V Global assessment

of functioning, but now under *DSM-5* the five axes of *DSM-IV* are combined into a single axis, with further specification about the presence of co-morbid conditions or level of functioning. For example the recording procedures of diagnosis have changed so that a child with *DSM-IV* pervasive developmental disorder not otherwise specified (PDD-NOS) that is associated with cerebral palsy will be recorded using *DSM-5* as autism spectrum disorder (ASD) associated with cerebral palsy, and the severity will be specified according to the level of support (for ASD) required by the child. This is a considerable change from *DSM-IV* where the child would have been listed with a diagnosis of *DSM-IV* PDD-NOS under Axis 1 and with a medical condition under Axis III and the level of function listed under Axis V.

A further change in *DSM-5* is that there has been a change from the categorical approach to the diagnosis of mental health disorders in *DSM-IV* to a dimensional approach in *DSM-5*, where the person's symptoms may be described along a continuum, or listed as mild, moderate or severe. It is also possible to list a number of 'specifiers' to further describe co-morbid conditions which may accompany the disorder. This is of particular relevance in the diagnosis of ASD, where instead of using Axis V to describe the level of functioning we specify if the symptoms experienced by the young person are mild, moderate or severe. Using *DSM-5* the presence of other medical conditions, psychosocial stressors or environmental factors can be listed simultaneously, and there is an extensive list of such factors included in *DSM-5*. Cultural issues are given more prominence, and rather than listing distinct culture-bound diagnoses there is now a chapter in *DSM-5* called 'Cultural formulation' that 'details a discussion of culture as it pertains to various diagnoses' (Murphy and Hallahan, 2016).

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It is also important to note that the *DSM-IV* category 'disorders usually first diagnosed in infancy, childhood or adolescence' has been removed, and the disorders from that category are now listed elsewhere *DSM-5*, either in the chapter on neurodevelopmental disorders or alongside disorders noted in adult psychiatry.

This paper focuses on the differences between *DSM-IV* and *DSM-5* in relation to attention-deficit/hyperactivity disorder (ADHD) and ASD. Some brief information is also provided on the changes in *DSM-5* in relation to other disorders. We will also comment on the implications of the *DSM-5* classification system for clinical practice in child and adolescent psychiatry in Ireland. Child psychiatrists in Ireland have in the past predominantly used *DSM-IV* for the diagnosis and classification of ADHD and of PDD. Many child psychiatrists use the ICD-10 classification system (WHO, 1992) for diagnosis and classification of other mental health disorders. ICD-10 does not list ADHD, but lists hyperkinetic disorder, which may or may not be associated with conduct disorder. It is not possible to diagnose ADHD inattentive type using ICD-10, which is one reason that *DSM-IV* was often used when working with ADHD, as well as the fact that most research on ADHD has used the *DSM* system of classification of disorders rather than the ICD system. It is interesting to note that the National Institute for Health and Care Excellence (NICE, 2016) guidelines issue guidelines on the management of ADHD, not on the management of hyperkinetic disorder, reflecting the widespread use of the term ADHD for children with this disorder.

Changes in the diagnosis of PDD/ASD

In *DSM-IV* the category of PDD includes five conditions (Table 1).

DSM-IV criteria for a diagnosis of autistic disorder include a total of six or more items of a list of 12 items, with four possible items of (1) qualitative impairment in social interaction, (2) qualitative impairment in communication and (3) restricted repetitive and stereotyped pattern of behaviour, interest and activities. There must be at least two items from the first category and one from each of the second categories for a diagnosis of autistic disorder. There must be delay or abnormal

Table 1. Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition *pervasive developmental disorders*

1. Autistic disorder
2. Rett's disorder
3. Childhood disintegrative disorder
4. Asperger's disorder
5. Pervasive developmental disorder not otherwise specified

Table 2. Autism spectrum disorder using Diagnostic and Statistical Manual of Mental Disorders (DSM)-Fifth Edition

A	Persistent deficit in social communication and social interaction (combines <i>DSM-IV</i> criteria 1/social reciprocal interaction and 2/communication)
B	Restricted, repetitive patterns of behaviour, interest and activities
C	Symptoms must be present in early developmental period
D	Symptoms cause clinically significant impairment in social and occupational functioning
E	These disturbances are not better explained by intellectual disability or global developmental delay

functioning in at least one of these categories before 3 years of age and the symptoms must not be due to childhood disintegrative disorder, or Rett's disorder.

In comparison with this *DSM-5* uses one umbrella term of ASD 299.00 for all these conditions, except Rett's disorder, aiming to improve diagnosis without limiting the sensitivity of the criteria or substantially changing the number of children being diagnosed. The diagnosis of Asperger's disorder is not present in *DSM-5*, and children who would previously have been diagnosed with Asperger's disorder are now diagnosed with ASD, with the severity of their disorder specified. *DSM-5* describes symptoms of ASD under using five main criteria as shown in Table 2, with three possible symptoms of social communication and social interaction deficit and four possible items of restricted, repetitive patterns of behaviour, interest and activities. Severity levels are shown in Table 3, with measures of the support needed by the child.

Rett's disorder is not listed in *DSM-5*, as this is now known to be due to a genetic disorder (Amir *et al.* 1999), and is thus a genetically distinct disorder from most cases of ASD. Children with Rett's disorder who present with autistic symptoms can, however, be diagnosed with ASD, specified as 'with known genetic or medical condition'. Most children with a well-established diagnosis of *DSM-IV* autistic disorder and those diagnosed with *DSM-IV* PDD-NOS should be given a diagnosis of ASD using *DSM-5* (Kim *et al.* 2014; Ohashi *et al.* 2015). However a new condition social communication disorder (SCD) is diagnosed if there are no restricted, repetitive patterns of behaviours, interests or activities. This change has been shown likely to reduce the current prevalence of ASD or PDD from 2.6% to 2.2%, though the combined rate of *DSM-5* SCD and of *DSM-5* ASD is expected to be very similar to the rate of *DSM-IV* PDD (Kim *et al.* 2014).

Under *DSM-5* criteria, individuals with ASD must show symptoms from early childhood, even if the disorder is not recognised or diagnosed until later.

Table 3. Severity levels for autism spectrum disorder in Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition

Severity level	Social communication	Restricted, repetitive behaviour
Requiring very substantial support (Level 3)	Severe deficit in verbal and non-verbal communication skills causing severe impairment in functioning, very limited initiation of social interactions and minimal response to social overtures from others	Inflexibility of behaviour, extreme difficulty in coping with change or repetitive behaviours markedly interfere with functioning in all spheres
Requiring substantial support (Level 2)	Marked deficits in verbal and non-verbal communication skills; social impairments apparent even with supports in place; limited initiation of social interactions and reduced or abnormal responses to social overture from others	Inflexibility of behaviour, difficulty in coping with change or other restricted and repetitive behaviour frequently enough to be obvious to casual observer and interfere with functioning in a variety of contexts
Requiring support (Level 1)	Without support in place, deficits in social communication cause noticeable impairments. Difficulty initiating social interactions and clear examples of atypical response to social overtures	Inflexibility of behaviour causes significant interference with functioning in one or more contexts

This allows an early diagnosis of ASD in some cases, and also allows those people whose symptoms may not be fully recognised until the social demands exceed their capacity to receive a diagnosis at a later stage. This is a considerable change from *DSM-IV*, where there was more emphasis on a delay or abnormal function before 3 years of age.

Finally in *DSM-5*, ASD and ADHD can be simultaneously diagnosed. This was not possible in *DSM-IV* as the PDD diagnosis took precedence, though it was acknowledged that many children with ASD showed symptoms of ADHD also. A comparison study of *DSM-5* criteria with *DSM-IV* found that most of patients with diagnosis of ASD under *DSM-IV* will retain their diagnosis under *DSM-5* (Huerta *et al.* 2012).

Comparison of *DSM-IV* and *DSM-5* for ADHD

ADHD is classified as a neurodevelopmental disorder in *DSM-5*, along with ASD, intellectual disabilities, specific learning disorders, and motor and communication disorders. This is a noticeable change from *DSM-IV* where ADHD was classified along with conduct disorder and oppositional defiant disorder in a category called 'attention-deficit and disruptive behaviour disorders'. There is now a section for disruptive, impulse-control and conduct disorders in *DSM-5*, which has a new category intermittent explosive disorder as well as the conduct disorder and oppositional defiant disorder which we are generally familiar with. Hence there is now a marked separation of the oppositional disorders from ADHD, which is in keeping with the findings of research studies, which suggest that ADHD and conduct disorders have different aetiologies, though the disorders often co-exist (Dick *et al.* 2005).

The definition of ADHD has also been updated in the fifth edition of *DSM* to more accurately characterise the experience of affected adults. The familiar nine symptoms of inattention and nine symptoms of hyperactivity/impulsivity are described, but examples have been included to illustrate the types of behaviour which children, adolescents and adults with ADHD may exhibit. The possibility of symptoms in the workplace is acknowledged. Adults and older adolescents (aged 17 years and older) can be diagnosed with ADHD if there are five of nine symptoms of inattention or five of nine symptoms of hyperactivity/impulsivity present. For younger age groups the familiar six of nine symptoms of inattention and/or six of nine symptoms of hyperactivity/impulsivity are required for a diagnosis of ADHD, similar to the diagnostic criteria for *DSM-IV*. Using *DSM-5* several of the individual's ADHD symptoms must be present before 12 years of age, compared with the requirement that symptoms are present before 7 years of age in *DSM-IV*. The condition in *DSM-5* can be described as having a 'combined presentation', 'predominantly inattentive presentation' or 'predominantly hyperactive/impulsive presentation', which is a minor change from the description in *DSM-IV*, where ADHD could be classified as 'ADHD, combined type', 'ADHD, predominantly inattentive type' or 'ADHD, predominantly hyperactive-impulsive type'.

Another important difference between *DSM-5* and *DSM-IV* is that we now have the option of specifying if the disorder is 'in partial remission' or if the disorder is 'mild', 'moderate' or 'severe', according to the number of symptoms present and the degree of impairment. *DSM-5* acknowledges that the course and presentation of ADHD could change during a person's lifetime. Those in partial remission are expected to experience (for at least 6 months) less than the original number of symptoms

found at diagnosis of ADHD, but that the symptoms present are still causing impairment. There is also the option of diagnosing other specified ADHD and unspecified ADHD, if all criteria for ADHD are not met.

As ADHD symptoms affect each person to varying degrees, the *DSM-5* requires professionals to specify the severity of disorder in affected individual. The severity can be categorised as mild, moderate or severe under *DSM-5*. Those with mild ADHD have few symptoms beyond the number required for diagnosis, and result in minor impairments at occupational or social settings. Those with severe ADHD have many symptoms beyond the number needed to make a diagnosis, or multiple symptoms that are particularly severe, or symptoms result in marked impairment at occupational or social settings. Those with moderate ADHD have symptoms of impairment between mild and severe ADHD.

Comparison of *DSM-IV* and *DSM-5* for other disorders of interest to child psychiatrists

The removal of 'disorders usually first diagnosed in infancy, childhood or adolescence' from *DSM-5* has necessarily involved considerable change for child and adolescent psychiatrists. Separation anxiety disorder and selective mutism have been moved into the *DSM-5* anxiety disorder chapter. Tic disorder is now diagnosed under the term motor disorder in the chapter on neurodevelopmental disorders. *DSM-5* divides reactive attachment disorder into two separate disorders – reactive attachment disorder (with inhibited symptoms) and a separate disorder now known as disinhibited social engagement disorder. Both disorders are listed in the chapter on 'Trauma- or Stressor- related disorder' along with adjustment disorders, post traumatic stress disorder and acute stress disorder – the conditions being linked by all having exposure to trauma rather than the conditions having symptoms in common. As described in Murphy and Hallahan (2016), the description of adjustment disorders includes specifiers such as 'with depressed mood', 'with anxiety', 'with mixed anxiety and depressed mood', 'with disturbance of conduct', 'with mixed disturbance of emotions and conduct' and 'unspecified'.

The *DSM-5* chapter on neurodevelopmental disorders includes the topics of ADHD, ASD, intellectual disability (intellectual developmental disorder) as well as communication disorders, specific learning disorders and motor disorders. The *DSM-5* description of intellectual disability requires both deficits in intellectual functioning confirmed by clinical assessment and standardised testing as well as deficits in adaptive functioning, with onset in the developmental period. The severity level of intellectual disability is then specified according to adaptive functioning in the conceptual domain, social domain

and practical domain. This is a considerable change from *DSM-IV*, where intellectual functioning as measured by standardised testing was used to classify the severity of intellectual disability. The *DSM-5* system of assessment of intellectual disability places considerable focus on a person's functional abilities, and a person with a low intelligence quotient who has good general adaptive functioning may not necessarily meet criteria for *DSM-5* intellectual disability.

The depressive disorders have been expanded in *DSM-5* to include two new conditions – premenstrual dysphoric disorder (previously in the Appendix to *DSM-IV*) and disruptive mood dysregulation disorder, which can be diagnosed in children over the age of 6 years of age, who are presenting with a 12 month history of temper or anger outbursts with underlying irritability. There are new ways of describing depression, using a dimensional rather than a categorical approach (Murphy and Hallahan, 2016).

The obsessive disorders now have their own chapter, rather than being categorised as an anxiety disorder. The obsessive disorders include obsessive compulsive disorder as well as body dysmorphic disorder, which was previously considered a somatoform disorder and include trichotillomania, which was previously listed as an impulse control disorder. It is now possible to diagnose 'hoarding' as an obsessive disorder, whereas it was previously listed as a symptom of obsessive-compulsive personality disorder in *DSM-IV* and to diagnose 'excoriation (skin-picking disorder)', which can now be diagnosed an obsessive disorder. The inclusion of body dysmorphic disorder as an obsessive disorder is in keeping with the treatment strategies for body dysmorphic disorder, as NICE guidelines have for some time described one treatment guideline for OCD and body dysmorphic disorder (National Institute for Health and Care Excellence, 2016).

Gender dysphoria is described as new diagnostic category in *DSM-5*, with emphasis on gender incongruence and symptoms in relation to this incongruence rather than cross-gender identification. The disorder was previously known as gender identity disorder in *DSM-IV*, and was classified in the chapter on sexual disorders. *DSM-5* subdivides gender dysphoria into 'gender dysphoria in children', 'gender dysphoria in adolescents and adults', 'other specified gender dysphoria' and 'unspecified gender dysphoria'.

The chapter on eating disorders has also been updated with the inclusion of binge eating disorder and also with the removal of the requirement for amenorrhoea for a diagnosis of anorexia nervosa (Murphy and Hallahan, 2016). Further information on the changes in *DSM-5* regarding conditions which occur in adults as well as in children are discussed by Murphy and Hallahan (2016) (Table 4).

Table 4. Changes in categories of disorders in Diagnostic and Statistical Manual of Mental Disorders (DSM)-Fifth Edition

Disorder	DSM-IV	DSM-5 category
Premenstrual dysphoric disorder	Appendix	Depressive disorder
Disruptive mood dysregulation disorder	Not listed	Depressive disorder
Asperger's disorder	Pervasive developmental disorder	Not listed
Social communication disorder	Not listed	Autism spectrum disorder
Rett's disorder	Pervasive developmental disorder	Not listed
Body dysmorphic disorder	Somatoform disorder	Obsessive disorder
Hoarding	A symptom of obsessive-compulsive personality	Obsessive disorder
Trichotillomania	Impulse control disorder	Obsessive disorder
Excoriation (skin-picking disorder)	Not listed	Obsessive disorder
Reactive attachment disorder	Disorders usually first diagnosed in infancy, childhood or adolescence	Trauma- or stressor-related disorder
ADHD	Attention-deficit and disruptive behaviour disorders	Neurodevelopmental disorder
Intermittent explosive disorder	Not listed	Disruptive, impulse-control, and conduct disorders
Tic disorder	Disorders usually first diagnosed in infancy, childhood or adolescence	Neurodevelopmental disorder
Gender dysphoria	Sexual disorders (gender identity disorder)	Gender dysphoria
Separation anxiety disorder	Disorders usually first diagnosed in infancy, childhood or adolescence	Anxiety disorder
Selective mutism	Disorders usually first diagnosed in infancy, childhood or adolescence	Anxiety disorder

Discussion

Child and adolescent psychiatrists in Ireland often use ICD in their clinics, but when diagnosing ADHD, they often use the *DSM* system of classification. The main point for child psychiatrists is that *DSM-5* uses a non-axial system, where numerous conditions can be diagnosed simultaneously using a dimensional rather than a categorical approach. This means that intellectual disability is no longer an Axis II diagnosis, but may be diagnosed simultaneously with other disorders. ADHD is now recognised as a neurodevelopmental disorder, alongside ASD and other disorders. This reflects current information regarding the aetiology of ADHD, which is familial and heritable, with associated neurobiological findings. The increased emphasis on adaptive functioning in intellectual disability and the emphasis on severity assessments in various domains for intellectual disability and for ASD helps the diagnostic assessment to link with individualised care planning.

The increased emphasis on adult ADHD in *DSM-5* reflects the evidence that ADHD is relatively common in adults (Faraone and Biederman, 2005; Kessler *et al.* 2006). There is now evidence that people diagnosed with ADHD have an increased mortality rate (Dalsgaard *et al.* 2015), an increased risk of road traffic accidents

(Chang *et al.* 2014), an increased risk of suicidal behaviour and completed suicide (Ljung *et al.* 2014) and of criminality (Dalsgaard *et al.* 2013). It has also been shown that the risks of criminality and of suicide related events in individuals with ADHD are reduced during periods on medication (Dalsgaard *et al.* 2013; Ljung *et al.* 2014), and a 30% reduction in the risk of criminality was noted when individuals were treated with medication for ADHD (Dalsgaard *et al.* 2013). In view of this the diagnosis and treatment of adult ADHD is now considered of paramount importance, and European guidelines for the treatment of adult ADHD have been developed (Kooij *et al.* 2010). It has been shown that the change in the age-of-onset criterion for a diagnosis of ADHD from before age 7 years to before 12 years of age was associated with an increase in the prevalence rate from 7.38% screening positive for *DSM-IV* to 10.84% screening positive for *DSM-5* in an epidemiological US study (Vande Voort *et al.* 2014).

In *DSM-IV* the disorders of ADHD and ASD were considered to be two categorical disorders, with one disorder (ASD) including symptoms of the other disorder (hyperactivity and inattention) at times. However there has been a considerable body of evidence since the publication of *DSM-IV* to show that ASD symptoms can co-exist with symptoms of ADHD

(Mulligan *et al.* 2009; Reiersen *et al.* 2007), and that the two disorders are more continuous overlapping disorders rather than two separate categorical disorders (Ghirardi *et al.* 2017).

The changes in diagnostic criteria for ADHD and ASD in *DSM-5* mean that more children can be diagnosed with ADHD than was previously possible, as children with prominent ASD symptoms may now be diagnosed with ADHD also. This may assist child psychiatrists who prescribe stimulants for hyperactive behaviour in children with ASD – such prescribing in Ireland now becomes the licensed use of a medication rather than the unlicensed use of a licensed medication (which was licenced for another use). The option of diagnosing ADHD ‘in partial remission’, may lead to more frequent review of the diagnosis of ADHD. It is interesting to note that NICE guidelines on ADHD have made recommendations for various levels of intervention depending on the severity of the disorder but previous classification systems did not describe different levels of severity of ADHD.

The change in the diagnostic criteria for ADHD should mean that more young people are diagnosed with ADHD, as we can now diagnose children with ADHD if they present for the first time with symptoms in the 7–11 years age-group, as well as diagnosing children who presenter at a younger age. However the change in diagnostic criteria for ASD may be associated with a lower prevalence of the disorder over time, as some children diagnosed with ASD using *DSM-IV* will be diagnosed with a SCD. The loss of the term ‘Asperger’s disorder’ may be challenging to some parents and young people previously diagnosed with this condition, especially considering that this group of young people do not like change.

Conclusions

The *DSM-5* is a classification system with a dimensional approach which has been added to the categorical approach, and a uni-axial rather than a multi-axial diagnostic system. The previous classification of ‘disorders usually first diagnosed in infancy, childhood or adolescence’ has been removed and the disorders from this chapter are now listed either in the chapter on neurodevelopmental disorders or alongside disorders which occur in adult life. The classification system for ADHD and for ASD have changed considerably in *DSM-5* and it is now possible to diagnose both disorders simultaneously, with both disorders listed as neurodevelopmental disorders. The severity of ADHD and of ASD must now be specified, and it is possible to diagnose ADHD in partial remission. ‘Asperger’s disorder’ can no longer be diagnosed, and children with this disorder will now be diagnosed with ASD,

with the severity specified. There are new ways of describing the severity of intellectual disability with considerable emphasis on adaptive functioning, which may assist in the development of care plans specific to each individual. The new diagnoses of SCD and intermittent explosive disorder are described and there is a new chapter on gender dysphoria.

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Conflicts of Interest

Dr Aisling Mulligan has acted as a consultant to Shire and to Point of Care. Dr Zainab Shujah has no conflicts of interest to disclose.

Ethical Standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committee on human experimentation with the Helsinki Declaration of 1975, as revised in 2008.

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