The DSM-5 diagnostic criteria for ADHD

Søren Dalsgaard MD PhD Senior Researcher[1,2,3]

[1] National Centre for Register-Based Research, Department of Economics and Business, School of Business and Social Sciences, Aarhus University, Denmark

[2] The Lundbeck Foundation Initiative for Integrative Psychiatric Research, iPSYCH, Aarhus and Copenhagen, Denmark

[3] Department for Child and Adolescent Psychiatry, Hospital of Telemark, Kragerø, Norway

The fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5)[1] revised the diagnostic criteria for a number of mental disorders, including attention deficit hyperactivity disorder (ADHD). Prior to publication, the DSM-5 ADHD and Disruptive Behavior Disorders Work Group prepared the revisions to the ADHD criteria, which was followed by a public hearing of the proposed changes.

Overall, the revised diagnostic criteria of the DSM-5 do not fundamentally change the concept of ADHD. However, the definition of the disorder has been updated, to more accurately characterise adults affected by ADHD. In all previous versions,[2–6] ADHD was depicted as a disorder affecting mainly children, and to a lesser extent adolescents, but not adults. Hence, the wording of the 18 symptoms, and corresponding examples, was appropriate for assessing mainly school-age children. With the DSM-5, efforts have been made to more appropriately guide clinicians when assessing adult ADHD.[7] These changes are based on two decades of research, which show that, although ADHD is a childhood-onset disorder, the core symptoms and resulting impairments can persist into adulthood,[8,9] and continue to have a significant impact on everyday life.[10–14]

ADHD criteria in the DSM-5

The most important changes to the criteria for ADHD in the DSM-5 are summarised in Box 1.

Classification and presentation

The DSM-IV chapter that included all diagnoses usually first made in infancy, childhood or adolescence has been removed from the DSM-5. ADHD is now placed in the neurodevelopmental disorders chapter, rather than with disruptive behaviours. This reflects the similarities between ADHD and many other neurodevelopmental disorders, such as childhood onset, male predominance, aetiologically strong genetic components and changes in volume, function and maturation of selected brain areas. Shifting the perspective of the disorder from disruptive behaviour to one with a neurobiological basis is an important step towards recognising ADHD as a real disorder.

Three subtypes of ADHD were defined in the DSM-IV. This has been revised to three different presentations (combined presentation, predominantly inattentive presentation and predominantly hyperactive/impulsive presentation). However, the criteria for distinguishing between these three presentations are identical to those of the DSM-IV-subtypes.

Age of onset

In an attempt to reduce the risk of false-negative diagnoses in adults, the age-of-onset criterion has been increased from seven to 12 years. The rationale for this change is that many adults with ADHD have difficulty remembering when symptoms began.[15]

In a study of lifetime prevalence of mental disorders, only half of those diagnosed with ADHD in adulthood reported experiencing symptoms before the age of seven, whereas up to 95% remembered having symptoms before the age of 12.[16] However, there is an inherent circularity in this type of argument, as the diagnosis must have been made without using the appropriate DSM-IV age criterion. This also resulted in a high lifetime ADHD prevalence (8%). It could be argued that this study demonstrates that increasing the age of onset increases the prevalence of ADHD among adults, by expanding the boundaries of the disorder. However, this change is not likely to increase the prevalence of ADHD in children, as very few children with ADHD experience symptom onset after the age of 12.[15]

A further change in the DSM-5 is to the symptoms that must be present before a certain age. The DSM-5 states that 'several symptoms' (not impairment) should be present before the age of 12, whereas the DSM-IV stated that 'symptoms

Box 1. The most important changes to the diagnostic criteria for ADHD in the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition[1,2]

- ADHD grouped with other neurodevelopmental disorders, rather than with behavioural disorders
- Subtypes changed to presentations
- Age of onset increased from seven to 12 years
- For adults and adolescents aged 17 and above, only five symptoms now required instead of the six needed for younger children
- New symptom examples added
- Updated definition of situational pervasiveness
- Definitions of ADHD severity added
- Autism spectrum disorder removed as an exclusion criterion

that cause impairment' should be present before the age of seven.

Number of symptoms

The DSM-IV required six of the nine inattentive, or six of the nine hyperactive/impulsive, symptoms to be present in order to establish a diagnosis of ADHD. The developmental course of ADHD suggests that the inattentive symptoms are often more persistent than the hyperactive/impulsive ones.[17,18] As a consequence, a large number of individuals previously diagnosed with ADHD in childhood no longer meet the full diagnostic criteria in adulthood, although individuals with sub-threshold ADHD still have significant impairment due to ADHD symptoms.[19] Thus, applying the same requirements for the number of symptoms in children and adults may lead to the underdiagnosis of ADHD in this group of impaired adults.

ADHD is now placed in the neurodevelopmental disorders chapter

To overcome this problem, when diagnosing adolescents and adults, the DSM-5 requires the presence of only five of the nine inattentive, or five of the nine hyperactive/impulsive, symptoms. The impact of this change has been examined in a population-based study of 18–19 year olds, which suggests that the prevalence of ADHD rises from 2.9% to 3.55% – a 27% relative increase.[20]

New symptom examples

The wording of the 18 core symptoms of ADHD is largely unchanged in the DSM-5. Symptoms are still divided into two lists, comprising nine symptoms of inattention (list A1.a–i) and nine symptoms of hyperactivity/impulsivity (A2.a–i).

For some symptoms, examples have been updated or new ones added, in order to make the criteria more age-appropriate. Most, but seemingly not all, of these new examples will make the criteria more appropriate for adolescents and adults. Only four of the 18 criteria remain unchanged (A2.a, c, d and f).

For some criteria, part of the DSM-IV text has been placed in parentheses, with new examples of the situation or setting. In some instances, further detail has been added. For example, in the criterion assessing attention to detail and careless mistakes (A1.a), the example 'work is inaccurate' has been added. While 'work' was already included in the DSM-IV, 'inaccurate' was not. Rather than offer a more age-appropriate example, this further explains (or expands) the core symptom.

In A2.g (blurting out answers before a sentence is completed), the new example 'completes people's sentences and "jumps the gun" in conversations, cannot wait for next turn in conversation' emphasises that this criterion focuses on impulsivity in conversations rather than in actions. In A2.h (difficulty waiting turn), the example 'while waiting in line' emphasises that this criterion focuses on impulsivity in actions in contrast to impulsivity in conversation. Again, these additions provide further explanation of the symptom, rather than offering a more age-appropriate example.

New examples of the hyperactive/impulsive criteria A2.e (often 'on the go') and A2.i (interrupting or intruding on others) include situations appropriate for adolescents and adults. The examples in these criteria do not merely make them more age-appropriate, but rather act as an expanded explanation, regardless of patient age. This may broaden the interpretation of these symptoms, increasing the number of children fulfilling these criteria. For instance, in criterion A2.e, adding the example 'is unable or uncomfortable being still for an extended time, as in restaurants, meetings; may be experienced by others as being restless and difficult to keep up with' includes a typical adolescent/adult situation (meetings). This may, however, also expand the criteria by explaining that the criterion is fulfilled if the patient – independent of age – is experienced as being restless by others. Using the word 'restless' introduces potential overlap with criterion A2.c, which also mentions restlessness. One behavioural symptom may, therefore, now result in the fulfilment of two separate diagnostic criteria.

In criteria A1.b, A1.e–i and A2.b, the new examples add new situations or settings that make the criteria more age-appropriate. This should simplify and improve the clinical assessment of adolescents and adults. For example, avoiding or disliking tasks that require sustained mental effort (A1.f) may include 'preparing reports, completing forms, reviewing lengthy papers', and often leaving his/her seat (A2.b) could be 'in the office or other workplace'. These examples clearly make the criteria more appropriate for adolescents and adults and are unlikely to expand the criteria.

Situational pervasiveness, impairment and severity

While the DSM-IV stated that 'some' ADHD symptoms that cause impairment in at least two different settings were required to fulfil diagnostic criteria, the DSM-5 states that 'several' ADHD symptoms should be present in at least two different settings. Although the revised text requires a

higher number of symptoms, impairment due to these symptoms is no longer required. It is uncertain whether these subtle changes in the wording of pervasiveness and impairment will have any impact on clinical practice.

Although references are often made to mild or severe ADHD, the classifications had not previously specified how such cases can be distinguished. Breaking new ground, the DSM-5 attempts to do just that, by defining three degrees of severity of ADHD. Mild ADHD is defined as having no, or only a few, symptoms in excess of those required for making the diagnosis. At the other end of the spectrum, severe ADHD requires either many symptoms in excess of the minimum required, several very severe present symptoms or a very high degree of social or occupational impairment. Individuals with moderate ADHD are between the two extremes, either in terms of the number of ADHD symptoms or the level of impairment. Although this initiative is praiseworthy, in that it defines terms that are already in use but lack specifications, the definitions are not particularly specific or operationalised. It could also be argued that adults with persisting ADHD may have a more severe form of the disorder; this has not been incorporated in the definitions of severity, despite the fact that adults with ADHD often have more problematic outcomes.[14]

The DSM-5 has not fundamentally changed the concept of ADHD

Comorbid disorders

In the DSM-IV, a diagnosis of a pervasive developmental disorder (autism spectrum disorder [ASD]) was an exclusion criterion for ADHD diagnosis. For decades, many clinicians have recognised the substantial overlap between ASD and ADHD,[21] and that symptoms of both disorders often co-occur, although sometimes below the level of diagnosis.[22] Clinicians have long provided treatment for individuals with both disorders,[23] a practice substantiated by good evidence. Recent studies have also documented possible genetic overlaps between the two disorders.[24–26] This evidence has been incorporated into the DSM-5, and ASD is no longer an exclusion criteria for ADHD. Instead, ASD is now recognised as a common comorbid disorder. With this change, the diagnostic classification is in harmony with clinical practice, and the revision will help more patients with the two disorders to be properly recognised, diagnosed and treated.

Another comorbid disorder that has been added as a new differential diagnosis in the DSM-5 is substance intoxication or withdrawal.

Conclusion

Moving from the DSM-IV to the DSM-5 has not fundamentally changed the concept of ADHD. The new criteria will facilitate adult diagnosis, which was one of the main objectives of the revision. Lowering the threshold for the number of symptoms required, increasing the age of onset and adding new examples that more appropriately describe the situations in which symptoms of ADHD typically impact adults, will likely result in more adult diagnoses. This is much needed, and the DSM-5 will help these individuals to be properly diagnosed and treated. Similarly, individuals with ADHD and comorbid ASD can now be formally diagnosed with both disorders. The attempt to distinguish between mild, moderate and severe ADHD may also be clinically helpful.

However, it seems that in wording the changes to enable diagnosis in adults, smaller, unrelated, corrections have also been made. In doing so, some symptoms have been broadened and overlap has been increased. This may increase the number of children that fulfil the ADHD criteria. Although the disorder remains fundamentally unchanged in the DSM-5, the revisions will most likely result in increased prevalence in children, adolescents and adults. While the wording of many symptoms is identical to that of the DSM-IV, the new or rephrased examples accompanying the symptoms will have an impact on questionnaires, ratings scales and diagnostic interviews, which must be revised accordingly ■

Key points

- The *Diagnostic and Statistical Manual of Mental Disorders,* 5th edition (DSM-5) revised the diagnostic criteria for a number of mental disorders, including ADHD.
- A significant change in the DSM-5 is the grouping of ADHD with neurodevelopmental disorders, rather than with behavioural disorders. Shifting the perspective to a disorder with a neurobiological basis is an important step forward.
- Other changes include increased age of onset and new examples and definitions of symptoms. One of the main objectives of these revisions is to facilitate the diagnosis of ADHD in adults
- Individuals with ADHD and comorbid autism spectrum disorder can now be formally diagnosed with both disorders.

Diary dates

28th European College of Neuropsychopharmacology Congress

29 August–1 September 2015, Amsterdam, the Netherlands
Contact: Colloquium Brussels
Tel: +32 2 776 06 57
email: organisingsecretariat@ecnp-congress.eu
website: www.ecnp-congress.eu

US Psychiatric and Mental Health Congress

10–13 September 2015, San Diego, USA
Contact: North American Center for Continuing Medical Education
Tel: +1 609 371 1137
email: info@psychcongress.com
website: www.psychcongress.com/psychcongress

European Academy of Paediatrics Congress and MasterCourse 2015

17–20 September 2015, Oslo, Norway
Contact: Paragon Group
Tel: +41 22 533 09 48
email: secretariat@eapcongress.com
website: www.eapcongress.com

2nd UK ADHD Partnership Conference: Building Better Futures for Children and Young People with ADHD

9 October 2015, London, UK
Contact: The UK ADHD Partnership
email: info@ukadhd.com
website: www.ukadhd.com/conference-2015

Canadian ADHD Resource Alliance 11th Annual ADHD Conference

16–18 October 2015, Vancouver, Canada
Contact: Canadian ADHD Resource Alliance
Tel: +1 416 637 8583
email: carol.simpson@caddra.ca
website: www.caddra.ca/events/conference

4th European Conference on Mental Health

21–23 October 2015, Riga, Latvia
Contact: Evipro
email: info@evipro.fi
website: www.ecmh.eu

Declaration of interest
The author declares that there is no conflict of interest.

References
1. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders,* 5th edn. Washington, DC: American Psychiatric Association, 2013.
2. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders,* 4th edn, text rev. Washington, DC: American Psychiatric Association, 2000.
3. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders,* 4th edn. Washington, DC: American Psychiatric Association, 1994.
4. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders,* 3rd edn, revised. Washington, DC: American Psychiatric Association, 1987.
5. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders,* 3rd edn. Washington, DC: American Psychiatric Association, 1980.
6. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders,* 2nd edn. Washington, DC: American Psychiatric Association, 1968.
7. Dalsgaard S. Attention-deficit/hyperactivity disorder (ADHD). *Eur Child Adolesc Psychiatry* 2013; **22**(Suppl 1): S43–48.
8. National Institute for Health and Care Excellence (NICE). *Attention deficit hyperactivity disorder: Diagnosis and management of ADHD in children, young people and adults.* Manchester: NICE, 2013. www.nice.org.uk/guidance/cg72 (last accessed 19/6/15)
9. Kessler RC, Adler L, Barkley R *et al.* The prevalence and correlates of adult ADHD in the United States: results from the National Comorbidity Survey Replication. *Am J Psychiatry* 2006; **163:** 716–723.
10. Dalsgaard S, Mortensen PB, Frydenberg M, Thomsen PH. Long-term criminal outcome of children with attention deficit hyperactivity disorder. *Crim Behav Ment Health* 2013; **23:** 86–98.
11. Dalsgaard S, Mortensen PB, Frydenberg M, Thomsen PH. ADHD, stimulant treatment in childhood and subsequent substance abuse in adulthood - a naturalistic long-term follow-up study. *Addict Behav* 2014; **39:** 325–328.
12. Dalsgaard S, Mortensen PB, Frydenberg M, Thomsen PH. Conduct problems, gender and adult psychiatric outcome of children with attention-deficit hyperactivity disorder. *Br J Psychiatry* 2002; **181:** 416–421.
13. Young SJ, Adamou M, Bolea B *et al.* The identification and management of ADHD offenders within the criminal justice system: a consensus statement from the UK Adult ADHD Network and criminal justice agencies. *BMC Psychiatry* 2011; **11:** 11–32.
14. Dalsgaard S, Østergaard SD, Leckman JF, Mortensen PB, Pedersen MG. Mortality in children, adolescents, and adults with attention deficit hyperactivity disorder: a nationwide cohort study. *Lancet* 2015; **385:** 2190–2196.
15. Polanczyk G, Caspi A, Houts R *et al.* Implications of extending the ADHD age-of-onset criterion to age 12: results from a prospectively studied birth cohort. *J Am Acad Child Adolesc Psychiatry* 2010; **49:** 210–216.
16. Kessler RC, Berglund P, Demler O *et al.* Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 2005; **62:** 593–602.
17. Molina BS, Hinshaw SP, Swanson JM *et al.* The MTA at 8 years: prospective follow-up of children treated for combined-type ADHD in a multisite study. *J Am Acad Child Adolesc Psychiatry* 2009; **48:** 484–500.
18. Biederman J, Mick E, Faraone SV. Age-dependent decline of symptoms of attention deficit hyperactivity disorder: impact of remission definition and symptom type. *Am J Psychiatry* 2000; **157:** 816–818.
19. Cherkasova M, Sulla EM, Dalena KL, Ponde MP, Hechtman L. Developmental course of attention deficit hyperactivity disorder and its predictors. *J Can Acad Child Adolesc Psychiatry* 2013; **22:** 47–54.
20. Matte B, Anselmi L, Salum GA *et al.* ADHD in DSM-5: a field trial in a large, representative sample of 18- to 19-year-old adults. *Psychol Med* 2014; **23:** 1–13.
21. O'Dwyer L, Tanner C, van Dongen EV *et al.* Brain volumetric correlates of autism spectrum disorder symptoms in attention deficit/hyperactivity disorder. *PloS One* 2014; **9:** e101130.
22. Ronald A, Larsson H, Anckarsater H, Lichtenstein P. Symptoms of autism and ADHD: a Swedish twin study examining their overlap. *J Abnorm Psychol* 2014; **123:** 440–451.
23. Dalsgaard S, Nielsen HS, Simonsen M. Five-fold increase in national prevalence rates of attention-deficit/hyperactivity disorder medications for children and adolescents with autism spectrum disorder, attention-deficit/hyperactivity disorder, and other psychiatric disorders: a Danish register-based study. *J Child Adolesc Psychopharmacol* 2013; **23:** 432–439.
24. Smoller JW, Craddock N, Kendler K *et al.* Identification of risk loci with shared effects on five major psychiatric disorders: a genome-wide analysis. *Lancet* 2013; **381:** 1371–1379.
25. Ronald A, Simonoff E, Kuntsi J, Asherson P, Plomin R. Evidence for overlapping genetic influences on autistic and ADHD behaviours in a community twin sample. *J Child Psychol Psychiatry* 2008; **49:** 535–542.
26. Lee SH, Ripke S, Neale BM *et al.* Genetic relationship between five psychiatric disorders estimated from genome-wide SNPs. *Nat Genet* 2013; **45:** 984–994.

» Reader survey winner

Congratulations to **Kaye Cormack** from the Phoenix ADHD Project, who was the lucky winner of a Kindle Fire in the prize draw.