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REVIEW ARTICLE

Do the diagnostic criteria for ADHD need to change? Comments on the preliminary proposals of the DSM-5 ADHD and Disruptive Behavior Disorders Committee

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Abstract The purpose of this commentary is to discuss the recent proposals for revision of the diagnostic criteria made by the DSM-5 ADHD and Disruptive Behavior Disorders Committee. The major concerns with the current diagnostic criteria for ADHD and hence the main suggestions for change focused on the general structure and organization of subtypes, the number, content and distribution of criteria, the age of onset criteria, the ascertainment of cross-situationality and the inclusion and exclusion criteria. Suggestions for change in these areas have been made in order that these changes can be tested in field trials before being finalised. Whilst several of the proposed revisions are relatively uncontentious e.g., the elaborated symptoms criteria, the identification of ADHD as a disorder of both behavioural and cognitive functioning, the situational and developmental dependence of symptoms, the permission to diagnose ADHD in the presence of an autism spectrum disorder, clarification of the relationship between ADHD and irritable mood and the importance of getting information from teachers and other third parties. Several of the other proposed changed are more contentious and will require extensive field testing to assess their impact on validity, reliability and clinical usefulness. These include changes to the way in which individuals with inattention but no hyperactivity/impulsivity are classified, the addition of four new impulsivity symptoms, a reduction in the number of symptoms required to meet criteria for older adolescents and adults and the raising of the age of onset to 12 years of age.

Keywords ADHD · Classification · DSM-5 · Diagnosis · Diagnostic systems

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Introduction

Arguments about diagnostic fidelity, validity and reliability abound for many mental health disorders, but are particularly pertinent to attention deficit hyperactivity disorder (ADHD). The diagnostic criteria, indeed even the core concept, of ADHD have been subject to numerous challenges [2]. It is therefore of upmost importance that any new diagnostic criteria are able to meet, and overcome these challenges. The two main diagnostic systems used in psychiatry International Classification of Diseases (ICDs) and the Diagnostic and Statistical Manual of Mental Disorders (DSM) have developed over time with the last major revisions ICD-10 and DSM-IV having been published in 1992 and 1994, respectively. There are now proposals for both to be updated. Current DSM-IV criteria for ADHD are now well established and are used extensively by clinicians across the world. They regard inattentive and hyperactivity–impulsivity symptoms as separate domains and it is possible to make a diagnosis of DSM-IV ADHD in the presence of symptoms in one or both of these domains. As a consequence there are three subtypes; predominantly inattentive (PI), predominantly hyperactive/impulsive (PH) and combined (C). In all cases the symptoms must be associated with functional impairment in at least two

settings, and some symptoms, and associated functional impairment, must have been present before the age of 7 years. Symptoms must not arise exclusively during the course of pervasive developmental disorder, schizophrenia or other psychosis and not be better accounted for by another mental disorder. Work on DSM-5 has been going for several years, field trials are due to start now with final publication due in 2012. The various DSM-5 committees have recently published both their preliminary comments and their preliminary proposals for revised criteria. These proposals will now be tested in field trials before final decisions regarding adoption are made. The DSM-5 ADHD Committee have published a set of specific comments regarding the shortcomings of the DSM-IV criteria and proposals for revisions and these have been made available for public review on the internet (http://www.dsm5.com). The main objective of this short paper is to critique these proposed changes and ultimately to ask whether there is currently sufficient evidence to justify significant alterations to the current nosology.

The proposed criteria

The Committee's criticisms on the DSM-IV diagnosis of ADHD are summarised in Appendix 1. Several of these focus on the general structure of the diagnostic category and the subtyping of ADHD. They also highlight issues relating to number content and distribution of criteria, and the age of onset criteria.

For each of these areas the Committee has proposed changes to the criteria. In addition they have proposed; increases in the amount of descriptive information for each symptom, changes in the way that information is gathered, changes in the way that the criteria are used for different age groups. They have also commented on the impact of current activity on symptoms, the nature of the disorder and the relationship between both autism and mood lability and ADHD. Whilst it may not be immediately clear to the casual reader of the DSM5 website the sole purpose of these preliminary proposals is for them to be tested in field trials. They are not for implementation into clinical practice even as preliminary criteria. The proposed revisions are detailed in Appendix 2.

Commentary

Several of these proposed changes seem very sensible and somewhat non-contentious. The elaborated symptoms criteria have been carefully worded and whilst most remain linked to the same core descriptor each now includes a description of potential behaviours across the age range. This should provide a partial solution to the current difficulties of matching adolescent and adults' difficulties to diagnostic criteria that were written for primary school age children. The changing of "often leaves seat" to "restless" will not be mourned by many clinicians. However, there must also be a degree of caution as these changes are not yet supported by empirical evidence and, as with most of the other changes will rely on there being extensive field trials to support their continued validity and reliability and describe their impact on prevalence and clinical presentation. There is also an issue about when to stop elaborating, too little and there is the risk that a single example will be taken as the sole reference point for what is supposed to be a broader criterion and too much and the system becomes unwieldy and impractical. Overall however, the wording changes seem positive.

We also welcome the subtle, yet important, reference to ADHD as relating to both behavioural and cognitive functioning. Hopefully this will serve to remind those clinicians, who mistakenly see ADHD simply in terms of behavioural difficulties, e.g. [5], that ADHD is associated with substantial cognitive impairments [7]. It was however also important that the Committee stopped short of trying to define ADHD in terms of cognitive subtypes, an idea that had been mooted at earlier stages in the process as the evidence regarding the cognitive underpinnings of ADHD is not yet well enough developed to allow for the development of clear evidence based stable cognitive subtypes. It is also helpful that the proposed revision points out that symptoms present differently in different circumstances (e.g., are usually more pronounced during work than when at leisure), that symptoms change across development and that the overall clinical situation may either improve or deteriorate over time (e.g., the decompensation that is frequently seen following transition from a small well supported primary school class to a large and more demanding secondary school situation). However, as we discuss below, we have some reservations about the more specific recommendations that have been made regarding age of onset and the numbers of symptoms required at different ages.

Two other important and, generally, positive change relate to comorbidity. The new criteria that a diagnosis of ADHD should be allowed in the presence of an autism spectrum disorder (ASD). This is to be welcomed. Evidence from recent well conducted studies clearly identify that a significant proportion of those with ASD will also meet criteria for ADHD [8]. Whilst it has been argued that the pathophysiology of ADHD symptoms may be different in children with and without ASD as it is important to remember that the DSM and ICD diagnoses are based on clinical presentation and do not make assumptions about causality. And anyway there are clear indications that

ADHD as defined by DSM-IV is already causally heterogeneous [3]. We believe that if implemented, this proposal would have a positive impact on a large number of individuals who would be more able to receive treatment for their ADHD symptoms.

There is a second issue regarding comorbidity within the new recommendations, however, here the intention of the revision is less clear. The criteria state that "Although irritable outbursts are common, abrupt changes in mood lasting for days or longer are not characteristic of ADHD and will usually be a manifestation of some other distinct disorder." This is important and reminds us that the presence of such mood instability should trigger additional diagnostic assessments to identify the cause of these difficulties. Our assumption is that such cases will often meet criteria for either oppositional defiant disorder or the newly proposed diagnostic category "temper dysregulation disorder with dysphoria (TDD)". This is welcomed and we hope that this approach will result in fewer children with ADHD receiving an inappropriate additional diagnosis of bipolar disorder than has been the case in recent years. If this is the case then the changes are welcomed. However, it is possible that, if lessons about the differences between temper dysregulation/emotional lability have not been learnt, the current wording will have the opposite effect and increase the use of the "bipolar disorder" diagnosis in such children. This would be unfortunate. We believe that the proposed changes to the wording of the criteria for manic and hypomanic episodes will also ensure that, things move in the right direction. Whilst a fuller discussion of these issues is beyond the scope of this article interested readers should consult the helpful documents prepared by the DSM-5 Committees on TDD (http://www.dsm5.org/Proposed%20Revision%20Attachments/Justification%20for%20Temper%20Dysregulation%20Disorder%20with%20Dysphoria.pdf) and bipolar disorder (http://www.dsm5.org/Proposed%20Revision%20Attachments/APA%20Developmental%20Approaches%20to%20Bipolar%20Disorder.pdf) for a fuller discussion of these points.

One issue that should also have been non-contentious relates to the gathering of information to demonstrate cross-situationality. Pervasiveness is central to the concept of ADHD. The current DSM-IV criteria make no recommendations regarding how information about behaviour at school or in the workplace is gathered. In Europe, it is accepted that a full assessment of ADHD will include an attempt to gather information from third parties (e.g., from school or work) either via an interview (face to face or by telephone) or by way of reports [9]. This does not seem to be the case in the US. The suggestion that this information should, wherever possible, be collected via direct report should be strongly encouraged but has unfortunately not been uniformly welcomed by US clinicians. This probably says more to the way clinical care is organised and delivered than whether or not it is a sensible recommendation. There is clear evidence to suggest that a teacher's perception of how a pupil behaves/performs at school is different to that of the parent and it therefore seems very sensible to require direct reports of out-of-home behaviours in addition to the parents report of behaviour at home and within the family. The reminder that just because a particular behaviour is not witnessed in the clinician's office does not mean that it is not a problem is welcome and hopefully will reduce the number of reports that state "ADHD cannot be present because the child/young person was well behaved in my office".

Changes regarding the general structure of ADHD, the age of onset criteria and new symptoms in the impulsivity domain are for us somewhat more contentious. Whilst the general structure of ADHD will remain unchanged with two dimensions: inattention and hyperactivity/impulsivity the work group have recommended changed to the way that subtypes are described. These will affect those individuals who present with attention deficit without hyperactivity. A new category "inattentive presentation (restrictive)" has been defined. This will apply to individuals who meet criteria for inattention (at least six inattentive symptoms etc.) but who have had no more than two hyperactive/impulsive over the past 6 months. Unfortunately, no empirical evidence is available to support this change and indeed the pros and cons discussed by the Committee focus on; the provision of a name/code for something that clinicians already do (even though there is no empirical basis); the acceptability of the name and the heuristic value of having a new "diagnosis" that will promote research. This seems rather like the cart driving the horse. Just because the current system is imperfect it does not necessarily mean that change should happen now. It is still important to consider whether we currently have strong enough evidence be certain that a new structure represents a clear improvement over the existing one? Whilst we agree that clear identification of these individuals it will be important for the field trials to clearly demonstrate validity, reliability and usefulness of changes before unleashing them onto the clinical community.

The Committee has proposed to deal with the relative under representation of impulsivity by recommending that four new impulsivity criteria be added. The purpose would be to appropriately recognise the importance of cognitive and emotional impulsivity in ADHD in general and adults in particular [1]. Whilst this would certainly correct the current under representation of impulsivity symptoms it also runs the risk of reducing accuracy by increasing the proportion of false negatives and positives. More worrying is the fact that provenance of the four new criteria proposed by the Committee is unclear. They acknowledge that these symptoms were not empirically derived from studies of

impulsive ADHD children nor were they drawn from existing impulsivity instruments but do not state how they were developed. It is therefore not clear how these symptoms will "behave" when used in the clinical arena. The current impulsivity symptoms do not appear to be independent from the hyperactivity symptoms (which is why they are represented within a single dimension). Whilst this may be a consequence of there being only three impulsivity criteria in the current criteria it will be important to assess whether the new symptoms will behave in the same manner, and if so do they add anything to the picture? The Committee also acknowledge that impulsivity is found in many disorders. By increasing the weight of impulsivity within the ADHD diagnosis we run the risk of also blurring the boundaries between disorders and/or increasing the likelihood of comorbidity. This highlights a particular tension associated with diagnostic systems; that best solution for distinguishing between disorders does not always result in the most comprehensive description of the disorder as a whole. This is discussed further in a later section.

With respect the diagnosis of ADHD in older adolescents and adults it has been clear for many years that as an individual gets older the current criteria become less appropriate. As previously mentioned the additional descriptors added to the symptoms will help here. The Committee have also recommended lowering the symptom threshold for older adolescents and adults from 6 to 4. Unfortunately this change is not based on empirical evidence and indeed the Committee originally suggests a reduction to three in their discussion paper. Again field trials are urgently required.

The final suggested change to consider concerns the age of onset criteria. One of the concerns with the current DSM-IV diagnosis is that the age of onset was set arbitrarily and that there are many reports of cases where onset occurred after age 7 years and that the current criterion lacks validity [4]. The proposed solution is to both increase the age of onset from 7 to 12 and to switch the focus from impairment to symptoms. This proposal has received some empirical support from a recently published study specifically designed to address this issue [6]. These authors found that applying the proposed changes to a community sample resulted in a negligible increase in ADHD prevalence of 0.1% and that there were no significant differences with respect clinical correlates or risk factors between those who manifested ADHD symptoms between ages 7 and 12 and those who manifested symptoms before age 7. It is not yet clear what impact the proposed changes will have on diagnostic rates in clinical samples, however we do agree that, if the decision the proposed changes result in additional patients receiving clinical benefits, then the changes are justified. However, these real world impacts in clinical settings will need to be carefully monitored.

In conclusion the DSM-5 ADHD Committee has had to make some challenging choice some of which we are hopeful will result in positive clinical effects and some of which clearly require extensive testing in field trials before a decision can be made about their utility in day to day clinical practice. For this reason, whilst we remain supportive of the Committee's aims, we would advise against the adoption these proposed criteria until their impact has been assessed in the field trials. If, as seems likely, a situation arises whereby not all of the required evidence is available by the deadline for publication, we would respectfully suggest that the Committee, and the APA, resist the temptation to implement tentative unsupported modifications that will need to be tested in the future. Instead we believe it makes better clinical sense to continue to live with these shortcomings, as we will do with many others, and wait for a next opportunity to make modifications. The risks associated with implementing changes that have not been adequately validated through field trials and then need to be reversed once this evidence becomes available are many and varied. For clinicians and their patients there are the risks of both missed and misdiagnosis and incorrect treatment decisions, for the researcher such changes would increase the already complex task of comparing the results of different studies and for the general public, and the field in general it would run the risk of sending a confusing, and inaccurate, message that even the experts still cannot agree what ADHD is.

Appendix 1: American Psychiatric Association DSM-5 ADHD and Disruptive Behavior Disorders Work Group criticisms of DSM-IV ADHD

General structure and subtyping

- Subtypes are unstable over time.
- Some critics view inattention (I) and hyperactivity–impulsivity (HI) as separate elements within a complex disorder. However, the structure of the subtypes (that include a mixture of both HI and I) does not reflect that. Others view I and HI as arbitrarily divided elements of a continuous-trait dimension. The current subtype structure offends both schools of criticism.
- Predominantly inattentive ADHD is one of the most frequently used diagnoses in very large samples f treated children. Many of these children show few, if any, manifestations of hyperactivity. However, the current subtype structure does not accurately allow for purely inattentive children.
- The existence of subtype entities lends weight to their being real although evidence to support their differentiation (as defined in the DSM-IV) in nature is limited.

Number, content and distribution of criteria

- The representation of hyperactivity, inattention, and impulsivity in the criterion set is uneven and, thus, differentially weights some features over others. Impulsivity is underrepresented, and inattention is overrepresented.
- Subtype organization leads to threshold artefacts, e.g., ten criteria may be present (five in inattention and five in hyperactivity), and the child would not be eligible for a diagnosis.
- Certain manifestations of adult ADHD are not well represented in the criteria, including the decline in the number of criteria with age without a reduction in impairment.
- Criteria are sparely described, and this enhances criterion variance, which is a major problem in everyday use.
- The large number of criteria is difficult for clinicians to remember.

Age of onset

- Age of onset was set arbitrarily and there are many reports of cases with an onset after age 7.

Appendix 2: Proposed revision of diagnostic criteria for ADHD in DSM-5

Attention deficit hyperactivity disorder

The disorder consists of a characteristic pattern of behavior and cognitive functioning that is present in different settings where it gives rise to social and educational or work performance difficulties. The manifestations of the disorder and the difficulties that they cause are subject to gradual change being typically more marked during times when the person is studying or working and lessening during vacation.

Superimposed on these short-term changes are trends that may signal some deterioration or improvement with many symptoms becoming less common in adolescence. Although irritable outbursts are common, abrupt changes in mood lasting for days or longer are not characteristic of ADHD and will usually be a manifestation of some other distinct disorder.

In children and young adolescents, the diagnosis should be based on information obtained from parents and teachers. When direct teacher reports cannot be obtained, weight should be given to information provided to parents by teachers that describe the child's behavior and performance at school. Examination of the patient in the clinician's office may or may not be informative. For older adolescents and adults, confirmatory observations by third parties should be obtained whenever possible.

A. Either (1) and/or (2).

1. *Inattention* Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that impact directly on social and academic/occupational activities. Note: for older adolescents and adults (ages 17 and older), only four symptoms are required. The symptoms are not due to oppositional behavior, defiance, hostility, or a failure to understand tasks or instructions.
   (a) Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities (for example, overlooks or misses details, work is inaccurate).
   (b) Often has difficulty sustaining attention in tasks or play activities (for example, has difficulty remaining focused during lectures, conversations, or reading lengthy writings).
   (c) Often does not seem to listen when spoken to directly (mind seems elsewhere, even in the absence of any obvious distraction).
   (d) Frequently does not follow through on instructions (starts tasks but quickly loses focus and is easily sidetracked, fails to finish schoolwork, household chores, or tasks in the workplace).
   (e) Often has difficulty organizing tasks and activities. (Has difficulty managing sequential tasks and keeping materials and belongings in order. Work is messy and disorganized. Has poor time management and tends to fail to meet deadlines.)
   (f) Characteristically avoids, seems to dislike, and is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework or, for older adolescents and adults, preparing reports, completing forms, or reviewing lengthy papers).
   (g) Frequently loses objects necessary for tasks or activities (e.g., school assignments, pencils, books, tools, wallets, keys, paperwork, eyeglasses, or mobile telephones).
   (h) Is often easily distracted by extraneous stimuli. (for older adolescents and adults may include unrelated thoughts.).
   (i) Is often forgetful in daily activities, chores, and running errands (for older adolescents and adults, returning calls, paying bills, and keeping appointments).
2. *Hyperactivity and impulsivity* Six (or more) of the following symptoms have persisted for at least

6 months to a degree that is inconsistent with developmental level and that impact directly on social and academic/occupational activities. Note: for older adolescents and adults (ages 17 and older), only four symptoms are required. The symptoms are not due to oppositional behavior, defiance, hostility, or a failure to understand tasks or instructions.

(a) Often fidgets or taps hands or feet or squirms in seat.
(b) Is often restless during activities when others are seated (may leave his or her place in the classroom, office or other workplace, or in other situations that require remaining seated).
(c) Often runs about or climbs on furniture and moves excessively in inappropriate situations. In adolescents or adults, may be limited to feeling restless or confined.
(d) Is often excessively loud or noisy during play, leisure, or social activities.
(e) Is often "on the go," acting as if "driven by a motor." Is uncomfortable being still for an extended time, as in restaurants, meetings, etc. Seen by others as being restless and difficult to keep up with.
(f) Often talks excessively.
(g) Often blurts out an answer before a question has been completed. Older adolescents or adults may complete people's sentences and "jump the gun" in conversations.
(h) Has difficulty waiting his or her turn or waiting in line.
(i) Often interrupts or intrudes on others (frequently butts into conversations, games, or activities; may start using other people's things without asking or receiving permission, adolescents or adults may intrude into or take over what others are doing).
(j) Tends to act without thinking, such as starting tasks without adequate preparation or avoiding reading or listening to instructions. May speak out without considering consequences or make important decisions on the spur of the moment, such as impulsively buying items, suddenly quitting a job, or breaking up with a friend.
(k) Is often impatient, as shown by feeling restless when waiting for others and wanting to move faster than others, wanting people to get to the point, speeding while driving, and cutting into traffic to go faster than others.
(l) Is uncomfortable doing things slowly and systematically and often rushes through activities or tasks.
(m) Finds it difficult to resist temptations or opportunities, even if it means taking risks (A child may grab toys off a store shelf or play with dangerous objects; adults may commit to a relationship after only a brief acquaintance or take a job or enter into a business arrangement without doing due diligence).

B. Several noticeable inattentive or hyperactive-impulsive symptoms were present by age 12.
C. The symptoms are apparent in two or more settings (e.g., at home, school or work, with friends or relatives, or in other activities).
D. There must be clear evidence that the symptoms interfere with or reduce the quality of social, academic, or occupational functioning.
E. The symptoms do not occur exclusively during the course of schizophrenia or another psychotic disorder and are not better accounted for by another mental disorder (e.g., mood disorder, anxiety disorder, dissociative disorder, or a personality disorder).

Specify based on current presentation

Combined presentation If both criterion A1 (inattention) and criterion A2 (hyperactivity–impulsivity) are met for the past 6 months.
Predominately inattentive presentation If criterion A1 (inattention) is met but criterion A2 (hyperactivity–impulsivity) is not met and three or more symptoms from criterion A2 have been present for the past 6 months.
Predominately hyperactive/impulsive presentation If criterion A2 (hyperactivity–impulsivity) is met and criterion A1 (inattention) is not met for the past 6 months.
Inattentive presentation (restrictive) If criterion A1 (inattention) is met but no more than two symptoms from criterion A2 (hyperactivity–impulsivity) have been present for the past 6 months.

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