

A Critical Review of ADHD Diagnostic Criteria: What to Address in the DSM-V

Allison S. Bell

Journal of Attention Disorders 2011 15: 3 originally published online 23 April 2010

DOI: 10.1177/1087054710365982

The online version of this article can be found at:

<http://jad.sagepub.com/content/15/1/3>

Published by:



<http://www.sagepublications.com>

Additional services and information for *Journal of Attention Disorders* can be found at:

Email Alerts: <http://jad.sagepub.com/cgi/alerts>

Subscriptions: <http://jad.sagepub.com/subscriptions>

Reprints: <http://www.sagepub.com/journalsReprints.nav>

Permissions: <http://www.sagepub.com/journalsPermissions.nav>

Citations: <http://jad.sagepub.com/content/15/1/3.refs.html>

>> [Version of Record](#) - Dec 9, 2010

[OnlineFirst Version of Record](#) - Apr 23, 2010

[What is This?](#)

A Critical Review of ADHD Diagnostic Criteria: What to Address in the *DSM-V*

Journal of Attention Disorders
15(1) 3–10
© 2011 SAGE Publications
Reprints and permission:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1087054710365982
http://jad.sagepub.com



Allison S. Bell¹

Abstract

ADHD is an impairing psychological disorder that predominantly affects children, but also adults to a lesser extent. As a result, a considerable amount of research has been completed in recent years to better understand the nature of the disorder to best treat individuals experiencing symptoms of ADHD. Especially with the publication of the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.) (*DSM-V*) on the horizon, substantial empirical work has been analyzing current ADHD diagnostic criteria and what upcoming changes should be made. Among child and adult populations, adjusting or completely eradicating the age of onset criterion is well supported. With specifically adult populations, amending symptoms to be more developmentally and environmentally appropriate also appears necessary. Even though research additionally questions the state of ADHD subtypes (with both child and adult populations) and other general diagnostic issues (model for diagnosis and level of impairment), continued research is needed to better clarify what other changes should be made in the *DSM-V* and beyond.

Keywords

ADHD, *DSM-V*, *DSM-IV*, diagnosis

Introduction

ADHD is the most pervasive psychological disorder among children in their schooling years (Woo & Keatinge, 2008), affecting many aspects of their functioning and development. The core features of ADHD, hyperactive behavior, impulsivity, and an inability to sustain attention, can significantly disrupt a child's ability to thrive in academic, social, and home environments. Current prevalence rates for children and adolescents with ADHD in the United States range from 3% to 11% (Barkley & Biederman, 1997), 4.2% to 6.3% (Mash & Barkley, 2003), and 5.29% (Rohde, 2008). Although it is not as common among adults, ADHD is also diagnosed across the life span (Kessler et al., 2006; Ramsay & Rostain, 2006).

The high prevalence rates and detrimental effects of ADHD (especially among children and adolescents) highlight the importance of a clinician's ability to understand, identify, and diagnose the disorder. Most clinicians depend on and utilize the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., Text Revision) (*DSM-IV*; American Psychiatric Association [APA], 2000) to assist in making valid psychological diagnoses. According to the current *DSM-IV*, to receive a formal diagnosis of ADHD, an individual must exhibit six or more symptoms of inattention and/or six or more symptoms of hyperactivity-impulsivity before the age of 7 in two or more contexts (APA, 2000).

In addition, individuals are currently categorized in one of the following subtypes: ADHD-I (predominantly inattentive type), ADHD-H (predominantly hyperactive-impulsive type) or ADHD-C (combined type) (APA, 2000). In surveying empirical literature, the current diagnostic criteria for ADHD have received various criticism and empirical speculation. The *DSM-IV* was published in 1994, and it appears that much has been learned about ADHD in the years since. Especially in anticipation of the publication of the *DSM-V* in the coming years, researchers and clinicians alike advocate for changes and modifications to the ADHD diagnostic criteria. The purpose of this article is to discuss the most prevalent issues in the ADHD literature in relationship to the development of the *DSM-V*, emphasizing how the *DSM-V* should reflect the changing nature of what has been recently discovered empirically about ADHD in both child and adult populations.

This article will be split into three sections. The first section of the article will focus on diagnostic issues related uniquely to children, including a thorough review of recent empirical work on the validity of ADHD subtypes and a

¹University of Iowa

Corresponding Author:

Allison S. Bell, MA, College of Education, University of Iowa,
361 Lindquist Center, Iowa City, Iowa 52242
Email: allison-bell@uiowa.edu

discussion around the age of onset criterion. The second section will cover diagnostic issues related to ADHD in adults. This section will focus on symptoms and characteristics of adult ADHD, the age of onset criterion, subthreshold diagnoses, and a proposed subtype of deficits in executive functioning. The third section will explore general issues related to the diagnosis of ADHD in both children and adults. These issues include what diagnostic model is most effective in providing an accurate clinical diagnosis and the definition of impairment. Implications and future directions will also be provided at the close of the article, emphasizing what diagnostic issues appear most relevant in light of the development of the *DSM-V*.

ADHD in Children

As mentioned earlier, ADHD is the most commonly diagnosed disorder among children. If gone untreated or undiagnosed, ADHD can severely influence how a child develops intellectually, emotionally, and socially (Woo & Keatinge, 2008). Like other disorders, the sooner ADHD is identified among children, the faster treatment can be implemented, which in turn provides a more hopeful prognosis. Current criticism on diagnostic issues of child ADHD congregate mainly around the ADHD subtypes and age of onset criterion.

ADHD Subtypes

The first point of contention with the current ADHD subtypes relates to the stability of subtypes throughout childhood. Lahey, Pelham, Loney, Lee, and Willcutt (2005) were specifically interested in how normal developmental changes in children interact with initial subtype classification. To this aim, Lahey et al. (2005) tracked children with an initial diagnosis of an ADHD subtype for 8 years to monitor the long-term stability of the diagnoses. Their main findings supported that while a diagnosis of ADHD was, in general, relatively enduring that as children aged they commonly moved between different subtypes. Children who were initially diagnosed with either ADHD-I or ADHD-H, for example, were more likely to be diagnosed with a different ADHD subtype in future years as compared to children initially diagnosed with ADHD-C (Lahey et al., 2005).

In explaining the transition from an initial diagnosis of ADHD-H to a later diagnosis of ADHD-C, Lahey et al. (2005) conceptualized ADHD-H as a less severe form of ADHD-C that either naturally remits or becomes more severe as children age (resulting in a diagnosis of ADHD-C). Other researchers have also conceptualized ADHD-H as simply an antecedent condition to later developing ADHD-C (Barkley, 2007). If subtypes are not relatively consistent over time, it is important to determine their purpose. "If a

child can be said to exhibit one subtype of ADHD at one time but another subtype at a later time, it is not clear that the use of nominal subtypes would serve the needs of individual children in clinic settings" (Lahey et al., 2005, p. 901). Lahey et al.'s findings call into question the validity of the current ADHD subtypes as they do not always prove to be reliable over time. Perhaps there is a more effective way to conceptualize diagnoses of ADHD that is not discrete like subtyping, but rather allows movement across symptoms and changes in symptom severity. If it is true that children with ADHD can fluctuate in the degree and type of symptoms they experience over time, as Lahey et al. suggest, it seems most appropriate for formal diagnostic criteria to reflect this vacillating characteristic of the disorder.

Beyond questioning the stability of the ADHD subtypes over time, a considerable amount of research has also scrutinized the accuracy of the three different ADHD subtypes (Jensen & MTA Group Members, 2002; Jensen, Martin, & Cantwell, 1997; Milich, Balentine, & Lynam, 2001; Nigg, Willcutt, Doyle, Sonuga-Barke, 2005; Pliszka, 2006). Some researchers believe that ADHD-I should be considered a separate disorder from the other ADHD subtypes (Lahey et al., 2005; Milich et al., 2001), whereas others provide recommendations for the *DSM-V* to construct new subtypes including a neuropsychologically impaired subtype (Nigg et al., 2005) and subtypes based on comorbidity with an ADHD diagnosis (Jensen & MTA Group Members, 2002; Jensen et al., 1997; Pliszka, 2006).

ADHD was originally presented in the *DSM-II* as a disorder of hyperactivity, and the inattention subtype was not formally established until 1980. As a result, debate over identifying the predominant symptoms of ADHD has existed throughout the years (Milich et al., 2001). Instead of belaboring over what subtypes or symptoms are most accurate representations of ADHD, some researchers have moved to question what subtypes actually belong under the ADHD umbrella. Milich et al. (2001) conducted a study that specifically compared ADHD-C and ADHD-I, guided by the hypothesis that perhaps ADHD-I should not have been originally conceptualized as part of ADHD. To analyze this, Milich et al. compared the two subtypes on various dimensions including: "essential and associated features, demographics, measures of cognitive and neuropsychological functioning, family history, treatment response and prognosis" (p. 463). The following are results which support that ADHD-I and ADHD-C are unrelated disorders: the predominant symptom of each subtype is different (hyperactivity-impulsivity vs. inattention), demographics for the subtypes are not consistent (meaning that different types of children develop ADHD-I from those who develop ADHD-C), ADHD-I can be considered a disorder with internalizing symptoms whereas ADHD-C is a behavioral or externalizing disorder, and individuals with ADHD-I are

not as effectively treated with medication as individuals with ADHD-C (Milich et al., 2001).

Milich et al. (2001) also reviewed how historically the inattentive subtype was developed in the context of the already validated combined subtype, and that the symptoms of inattention may have been structured in a way to stand alone, but also fit under the diagnostic criteria for the combined subtype. Taking this a step further, Milich et al. suggested that only the inattentive symptoms that were conceived as being realistic for the combined subtype were included under the inattention criteria. These points alone question the validity of ADHD-I. As a suggestion for future research, Milich et al. proposed the consideration of ADHD-I as a learning disorder (in that the inattention symptoms severely affect a child's ability to learn) or among the disorders of internalizing symptoms. Milich et al.'s work seriously calls into question the inclusion of the inattention subtype in ADHD and seems to be a long-awaited answer to those who were uncomfortable with incorporating the inattention subtype into the ADHD nomenclature in the first place.

Continuing to examine the subtypes of ADHD in children, Nigg et al. (2004) proposed the consideration of a new subtype in which the predominant symptom of ADHD is neurological impairment. Taking a medical etiological perspective, Nigg et al. founded this idea on past research that has shown how an individual's neuropsychological development is likely the cause of some ADHD symptoms and impairment. Nigg et al. referenced past studies that compared groups of children with ADHD to groups of children without ADHD, questioning whether a subset of children with ADHD evidenced significant symptoms of executive functioning deficits beyond what the non-ADHD group experienced. Although Nigg et al. acknowledged that research in this area is only preliminary, it nonetheless shows an additional way that children with ADHD could be classified to better inform their treatment. As past research supports that the neuropsychology of some children is most likely at the root of developing ADHD, it may be informative to incorporate this into diagnosis and treatment. It also seems appropriate that future studies investigate the differences in neuropsychological functioning among children with ADHD. Constructing an entirely separate subtype with its defining feature being neuropsychological impairment only appears effective and appropriate if some children with ADHD experience more severe impairment in this area than other children with ADHD.

Another way that some researchers are conceptualizing different subtypes is based on what disorders commonly occur in the presence of ADHD among children (Jensen & MTA Group Members, 2002; Jensen et al., 1997; Pliszka, 2006). Specifically looking at the co-occurrence with other behavioral disorders, research shows that approximately

45% to 84% children diagnosed with ADHD also exhibit symptoms that warrant a diagnosis of oppositional defiant disorder (ODD) or conduct disorder (CD) (Pliszka, 2006). The presence of both ADHD and CD symptoms in a child appears to be severe enough that researchers express the need for a separate subtype to cover this comorbid condition (Pliszka, 2006). Although prevalence rates may be lower, it appears that there is also substantial overlap of ADHD with many other psychological disorders: learning disorders, bipolar disorder, anxiety disorders, and so on (Jensen et al., 1997; Pliszka, 2006). It appears that because these different comorbid conditions inform how to most effectively provide treatment, they should be considered as part of future *DSMs*. As a thorough review of the different studies that specifically focus on comorbidity with ADHD in children exceeds the purpose of this article, it is clear that variation exists within the research regarding how to deal with the issue. If the *DSM-V* did include subtypes based on comorbidity, it would be necessary to clearly identify parameters beforehand to identify how pervasive and impairing a comorbid condition must be to warrant a separate subtype diagnosis. Without doing this, it seems that a case could be made for many different subtypes of ADHD based on comorbid conditions, which could lead to greater confusion as opposed to increased precision.

As further research is still needed to clarify what type of subtyping is most appropriate for ADHD, what the research does reflect is that maintaining the current subtypes of ADHD-C, ADHD-I, and ADHD-H seems less than accurate. Suggestions to remove ADHD-I from the ADHD subtypes, add a subtype based on neuropsychological impairment, and consider subtypes based on comorbidity (especially the comorbidity of ADHD and CD) are all relevant arguments that need to be considered in reviewing the state of ADHD subtypes in the *DSM-V*.

Age of Onset

Current diagnostic criteria for ADHD assert that impairment due to some symptoms must be present before the age of 7 for a valid diagnosis (APA, 2000), which has been a major point of contention and debate among clinicians and researchers. If an individual cannot report impairment before the age of 7, but currently reports symptoms of ADHD (and may even report symptoms before the age of 7), is a diagnosis of ADHD valid? Clinical intuition tells us yes, but the current *DSM-IV* tells us no. Especially with the increase of ADHD in adults (a focus of the latter part of the article), the age of onset criterion has become increasingly questioned across all age groups.

Applegate et al. (1997) reviewed the validity of the ADHD age of onset criterion from field trials that were done during the development of the *DSM-IV*. Looking at

the discrepancy of when symptoms began versus when symptoms of impairment were reported, it appears that symptoms of ADHD are commonly present in children before the age of 7, whereas impairment is often reported later (Applegate et al., 1997). This seemed especially accurate for children experiencing symptoms of ADHD-I and ADHD-C (because of necessity of inattention symptoms) and that impairment as a result of inattention may not develop until children have been in an academic environment for a couple of years (Applegate et al., 1997). Considering that inattention symptoms can easily be masked (as compared to the externalizing symptoms of hyperactivity and impulsivity) it only makes sense that impairment before the age of 7 can be challenging to validate among children with ADHD-I and ADHD-C.

Barkley and Biederman (1997) theoretically reviewed the history of the age of onset criterion for ADHD, including comments on the Applegate et al. (1997) work. As perhaps a shock to some clinicians, it appears that the age of onset criterion was initially included in the *DSM* not on the basis of empirical evidence, but simply because ADHD seemed to predominantly be a disorder that began in childhood (Barkley & Biederman, 1997). Although it is true that ADHD is most prevalent among children, it is questionable whether impairment due to symptoms is present before the age of 7 years. Unfortunately, Applegate et al.'s reports from the *DSM-IV* field trials were released after the publication of the *DSM-IV*. Although it is pointless to contemplate the untimeliness and order of these events, it seems resounding clear that the age of onset criterion should either not be a part of the ADHD diagnostic criteria or at least be extended to a later age. In fact, Applegate et al. point out how many clinicians currently disregard the age of onset criterion altogether when diagnosing ADHD among children. Although some may consider this poor or unethical clinical practice (as it is inconsistent with the *DSM-IV*), others may conceptualize it as following empirical direction that the *DSM-IV* failed to take. Out of all changes that the *DSM-V* may make in terms of ADHD diagnostic criteria, this issue seems to be of utmost relevance.

ADHD in Adults

Taking a historical perspective, most psychological disorders were first discovered and defined among adult populations, and later selectively (and when appropriate) applied to children (McGough & McCracken, 2006). ADHD provides an exception in that it was initially conceptualized as a disorder of childhood, with symptoms present before the age of 7 years. As stated earlier, ADHD continues to be most prevalent among children and adolescent demographic groups, but at the same time is not strictly confined to this population. In fact, recent research

has identified the presence of ADHD symptoms and resulting levels of impairment in adult populations as well. A study on prevalence rates completed in 2006 found that 4% of the U.S. adult population experience symptoms of ADHD that warrant a clinical diagnosis (Kessler et al., 2006). This statistic communicates the pervasiveness of ADHD among not only children and adolescents, but also adults. As a result, it is necessary that the *DSM-V* consider adult diagnostic issues when improving ADHD criteria. The following are important diagnostic issues that relate to adults with ADHD: symptom characteristics, age of onset, subthreshold diagnoses, and deficits in executive functioning subtype.

Symptom Characteristics

ADHD was originally considered a childhood disorder, and symptoms and diagnostic criteria were correspondingly written with specific relevance to children and their environments. One of the hyperactivity symptoms in the *DSM-IV* ("often fidgets with hands or feet or squirms in seat," APA, 2000, p. 92), for example, appears to be written exclusively for its application to children, most likely in the context of schooling. Applying this type of diagnostic criteria to adults can be challenging and leaves much up to a clinician's interpretation. Although fidgetiness may still be common among adults with ADHD, a more appropriate symptom could be, "has a challenging time sitting still through regular work meetings" or something of that nature. Ramsay and Rostain (2006) suggested that specific adult ADHD symptom criteria should include: drives more than the speed limit, experiences difficulty with organization, and has trouble following through on commitments. Furthermore, McGough and Barkley (2004) stated that current ADHD criteria have never been validated among adult populations, even though these same criteria are used to diagnose adult ADHD every day. Studies have shown that symptoms of adult ADHD commonly manifest in driving difficulties, legal problems, and challenges in the workplace, symptoms that are not specifically identified in the *DSM-IV* (Faraone et al., 2006). It appears that to help ensure valid diagnoses of adult ADHD, diagnostic criteria need to be rewritten in a way that can be appropriately applied to adult populations. Although many of the symptoms of ADHD in childhood are similar to those of ADHD in adulthood, it is necessary that context and developmental level be accounted for and incorporated into the construction of adult ADHD diagnostic criteria.

Age of Onset

Similar to diagnostic issues with child ADHD, age of onset criterion also poses significant diagnostic problems for

adults with ADHD symptoms (Faraone et al., 2006). Asking an adult who is presenting with symptoms of ADHD to retroactively and accurately recall the onset of his or her impairment related to symptoms can be difficult, if not impossible. How should a clinician go about determining the validity of an adult's recall? To answer this question, it seems appropriate to question the importance of the age of onset criterion of 7 years of age. Faraone et al. (2006) interested in this issue as well as the validity of a subthreshold diagnosis of adult ADHD, completed a study comparing four groups of adults: an ADHD group (diagnosed with childhood onset), a late onset ADHD group (did not meet the age of onset criterion), a subthreshold ADHD group (did not meet enough criteria for a formal diagnosis), and a non-ADHD group. Results from the study indicated that using the childhood onset group as a comparison, the late onset group depicted accurate representations of ADHD, despite its failure to meet the age of onset criterion (Faraone et al., 2006). Similar to studies and reviews that have been conducted among child populations (Applegate et al., 1997; Barkley & Biederman, 1997), it appears that employing the current age of onset criterion contributes to missed diagnoses of adult ADHD and poor clinical practice.

In a more recent study, Karam et al. (2009) found that adults with late onset ADHD experienced less severe symptoms of ADHD but reported an increased frequency of generalized anxiety symptoms, which is related to internalizing disorders. Karam et al. also found that childhood onset ADHD was related to more externalizing symptoms in adult ADHD, specifically disciplinary and authority-related difficulties. Karam et al. encouraged future research to focus on the late onset subgroup of adult ADHD to better understand the functioning of this population, especially in comparison to the childhood onset group. Similar to Faraone et al. (2006), Karam et al. acknowledged that even those adults with ADHD who were diagnosed later in life still represent a population of individuals experiencing an impairing disorder that need greater clinical understanding. Just because a subgroup of the adult ADHD population fails to fit under current diagnostic criteria does not mean their presentations of the disorder should be molded into something that is more in accord with the *DSM-IV*. The standards in the *DSM-IV* must rather be adjusted to account for the heterogeneity of how adults experience ADHD.

Subthreshold Diagnoses

In addition to looking at childhood versus late onset adult ADHD, Faraone et al. (2006) were also interested in studying whether adults with subthreshold diagnoses of ADHD experience similar degrees of impairment as compared to those adults with threshold diagnoses, challenging the necessity of needing six of nine ADHD symptoms for a

diagnosis. Although results from the study showed that “the subthreshold group was more impaired than the group without ADHD” (Faraone et al., 2006, p. 1726), in comparison to the threshold group, evidence was not found to support that the subthreshold group experienced impairment of similar severity. Impairment among the subthreshold group, however, still existed (Faraone et al., 2006). Incorporating this issue into modifications for the *DSM-V*, it is important to determine whether subthreshold diagnoses of adult ADHD are appropriate and how these individuals should be treated and diagnosed differently than adults with threshold ADHD.

Deficits in Executive Functioning Subtype

Another diagnostic issue that is of specific relevance to adults is the presence of executive functioning deficits as a result of ADHD. Empirical reviews have found that adults with ADHD commonly experience difficulties in “sustained attention, working memory, verbal fluency, as well as motor and mental processing speed” (Biederman et al., 2006, p. 1730), which can negatively affect their functioning in various aspects of life, especially in the workplace. To further understand how adult ADHD can influence executive functioning, Biederman et al. (2006) conducted a study that assessed the executive functioning abilities in an ADHD group of adults and a non-ADHD group of adults. One of Biederman et al.'s most significant finding was that adults in the ADHD group who qualified as showing executive functioning deficits reported lower socioeconomic and occupation status, as well as poorer academic and achievement outcomes as compared to others.

In reviewing the Biederman et al. (2006) study, McGough and McCracken (2006) emphasized the increase in global impairment that adults with ADHD and executive functioning deficits experience. While experiencing symptoms of ADHD can alone be problematic and detrimental to functioning, if those symptoms include executive functioning deficits, the effects of the disorder can become even more severe. It is especially pertinent to consider what jobs demand an individual's reliance on executive functioning skills to be successful in the workplace. Similar to the proposal of a neurologically impaired subtype for children with ADHD (Nigg et al., 2004), Biederman et al. suggested the inclusion of an executive functioning deficit subtype for adults with ADHD. As was similarly suggested for future exploration with neuropsychological impairment in children with ADHD, it is important for future research to investigate how adults with ADHD differ in terms of executive functioning deficits. What specific factors lead some adults with ADHD to experience severe and impairing executive functioning deficits whereas others may experience just minimal executive functioning deficits?

Although more research is needed in this area, it appears that ADHD can influence adults in ways that reduce their executive functioning, which should be addressed when considering what are the most relevant diagnostic features of ADHD among adults.

General Diagnostic Issues

In addition to diagnostic issues that relate only to children and adolescents or only to adults with ADHD, some important general issues are relevant to both population groups. Two of these primary issues are what diagnostic model is most appropriate for ADHD and how to best understand and define level of impairment (which is necessary for an accurate diagnosis).

Dimensional Versus Continuum Model of ADHD

ADHD is currently conceptualized (along with most other psychological disorders) through a categorical framework as is presented in the *DSM-IV*. Following this, to receive a diagnosis of ADHD, an individual must experience a specified amount of symptoms (six or more symptoms of ADHD-I and/or six or more symptoms of ADHD-H). Alternatively, if an individual experiences some symptoms of ADHD (but not enough to warrant a valid diagnosis), he or she would not receive a diagnosis because he or she falls outside of the clinical range. Some researchers have questioned the utility of employing a categorical model for diagnosing ADHD (Haslam et al., 2006) as well as other psychological disorders (Mash & Barkley, 2003). In a recent study, Haslam et al. (2006) drew on taxometric methods to compare the use of a categorical model to a dimensional model for diagnosing ADHD among children and adolescents. Results of the study implied that using a continuum or dimensional model for diagnosing ADHD appeared most effective as it allowed for the incorporation of a greater level of individual difference related to one's experience of ADHD (Haslam et al., 2006). Haslam et al. also mentioned that including a dimensional aspect in the current continuum model for diagnosing ADHD could make the most clinical sense. "Even if ADHD falls on a continuum, impairment may tend to become clinically meaningful at a certain level of severity, at which a categorical diagnosis might reasonably be made (Haslam et al., 2006, p. 645)." It appears that current work for *DSM-V* should consider the clinical advantages of conceptualizing ADHD on both a categorical and dimensional model of diagnosis.

Another issue that challenged the use of a categorical framework for the diagnosis of ADHD is Lahey et al.'s (2005) work on the instability of ADHD subtypes throughout childhood (which was described earlier). Results from

this study called into question the usefulness of subtyping with ADHD. As an alternative, Lahey et al. suggested that the *DSM-V* adopt a single dimension for ADHD in which individuals can move depending on the number and severity of their inattention and hyperactive-impulsive symptoms. This would account for the changing nature of ADHD, especially into an individual's adolescent and adult years. In this sense an individual's experience with ADHD would be conceptualized not as part of a distinct category but rather along a continuum of increasing symptoms and severity. This recommendation seems in line with Haslam et al.'s work (2006) and also reflects a movement away from categorically conceptualizing individuals with ADHD.

Level of Impairment

Another general diagnostic issue related to ADHD concerns an individual's level of impairment. Although the *DSM-IV* clearly defines the specific symptoms one must experience to receive a diagnosis, it is rather vague when explaining impairment (APA, 2000). Although it would seem logical to assume that one's impairment becomes more severe as the number of symptoms reported also increases, this rationale does not hold in considering various individual factors that must be accounted for and may contribute to one's experience of ADHD. Gordon et al. (2006) used four distinct samples of individuals with ADHD to examine the relationship between reported number of symptoms and level of impairment. A major finding of the study was that the average correlation between ADHD reported symptoms and experiences of impairment was explained by less than 10% of the variance, implying that ADHD symptoms and impairment are distinct constructs, with little conceptual overlap (Gordon et al., 2006). It appears that equating symptoms with impairment is invalid. Lewandowski, Lovett, Gordon, and Antshel (2006) suggested that future work focus on the concept of impairment and its role in diagnosing ADHD. In addition, similar to what has been done with other psychological disorders, Ramsay and Rostain (2006) recommended the use of including qualifiers of mild, moderate, and severe to a diagnosis of ADHD to provide greater communication regarding an individual's level of clinical impairment. As it is clear that an individual must be experiencing clinical impairment as the result of ADHD symptoms for a valid diagnosis, less is known about how to best understand, and apply the concept of impairment.

Implications and Future Directions

ADHD is clearly a psychological disorder that affects the functioning of children and adults alike. After reviewing

the current literature, the need to refine current *DSM-IV* diagnostic criteria in a way to more accurately represent ADHD as it is seen and described in the general population also seems resoundingly apparent. To best serve the individuals experiencing symptoms of ADHD, changes to the *DSM-IV* are imminent. In review, this central purpose of this article was to summarize and analyze issues related to the diagnosis of ADHD among both children and adults. General diagnostic issues relating to both populations were also mentioned at the end.

In terms of issues related to the diagnosis of ADHD in children, empirical criticism focused on two central areas: altering the current subtypes and re-examining the necessity of the age of onset criterion. Regarding the ADHD subtypes for children, researchers have questioned the stability of the subtypes throughout childhood (Lahey et al., 2005), the correctness of the three existing subtypes (Jensen & MTA Group Members, 2002; Jensen et al., 1997; Milich et al., 2001; Nigg et al., 2005; Pliszka, 2006) specifically inquiring about the inclusion of ADHD-I in the ADHD family (Milich et al., 2001), whether including a neuropsychological subtype is appropriate (Nigg et al., 2005), and how subtyping based on common and pervasive comorbid disorders may be clinically useful (Jensen & MTA Group Members, 2002; Jensen et al., 1997; Pliszka, 2006). Although cases for the above arguments appear well founded and articulated, consensus within the literature does not exist regarding what is most pertinent in addressing the subtypes for the *DSM-V*.

Adjusting the age of onset criterion for children with ADHD is contrastingly well supported and should seriously be reconsidered in the construction of the *DSM-V* (Applegate et al., 1997; Barkley & Biederman, 1997). Especially considering that many clinicians currently disregard this criterion (making a diagnosis of ADHD if impairment due to symptoms cannot be reported before the age of 7) it seems pointless to carry it on to the *DSM-V*. Either completely abandoning the age of onset criterion or extending it to a later age would increase the continuity between how clinicians are currently practicing and the directives of the *DSM-IV*.

Diagnostic concerns related to adults with ADHD consist of examining symptom characteristics (Faraone et al., 2006; McGough & Barkley, 2004; Ramsay & Rostain, 2006), the age of onset criterion (Faraone et al., 2006; Karam et al., 2009), subthreshold diagnoses (Faraone et al., 2006), and including a deficits in executive functioning subtype (Biederman et al., 2006; McGough & McCracken, 2006). Of these issues, it seems that adjusting current diagnostic criteria to incorporate symptoms that are relevant to adult populations seems most pressing and necessary. The data support the existence of ADHD well into adulthood and the resulting impairment that can especially occur if it goes untreated. Because of this, it seems of ethical responsibility

to include diagnostic criteria of ADHD in the *DSM-V* that will specifically aid in the diagnosis of the disorder among adults, rather than leaving much up to one's clinical interpretation. Similar to conclusions drawn from the literature regarding subtypes with child populations, it appears that more research is also needed with regards to what changes should be made for subtyping among adults with ADHD. Finally, as was emphasized earlier, changing the age of onset criterion will not only aid in diagnosing ADHD among children, but also with adults as well. Faraone et al. (2006) and Karam et al.'s (2009) work with adult populations further clarify the need to modify the age of onset criterion for a valid diagnosis of ADHD. General issues relating to the diagnostic model for ADHD and level impairment have also been emphasized in the literature. Some evidence supports incorporating a continuum dimension to the current categorical model for diagnosing ADHD (Haslam et al., 2006; Lahey et al., 2005), but continued research is necessary to further strengthen this argument. Continuing to also investigate the role and definition of clinical impairment in making accurate ADHD diagnoses should persist.

In sum, when considering that the *DSM-IV* is a clinician's guidebook in making valid diagnoses of ADHD, it is imperative that it mirrors the current state of knowledge and research. To disregard these empirical advancements is unethical in that by doing so clinicians are failing to care for clients with symptoms of ADHD to the best of their ability. To bridge the gap between the *DSM-IV* and current research on the diagnostic criteria of ADHD, specific changes must be made in the *DSM-V*.

Declaration of Conflicting Interests

The author declared that she had no conflicts of interests with respect to her authorship or the publication of this article.

Funding

The author received no financial support for the research and/or authorship of this article.

References

- American Psychiatric Association (APA). (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., Text rev.). Washington, DC: Author.
- Applegate, B., Lahey, B. B., Hart, E., Biederman, J., Hynd, G., Barkley, R. A., . . . Shaffer, D. (1997). Validity of age-of-onset criterion for ADHD: A report from the DSM-IV field trials. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36*, 1211-1221.
- Barkley, R. A. (2007). What may be in store for DSM-V. *ADHD Report*, *15*, 1-7.
- Barkley, R. A., & Biederman, J. (1997). Toward a broader definition of the age-of-onset criterion for attention-deficit hyperactivity

- disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 1204-1210.
- Biederman, J., Petty, C., Fried, R., Fontanella, J., Doyle, A. E., Seidman, L. J., & Faraone, S. V. (2006). Impact of psychometrically defined deficits of executive functioning in adults with attention deficit hyperactivity disorder. *American Journal of Psychiatry*, 163, 1730-1738.
- Faraone, S. V., Biederman, J., Spencer, T., Mick, E., Murray, K., Petty, C., . . . Monuteaux, M. C. (2006). Diagnosing adult attention deficit hyperactivity disorder: Are late onset and sub-threshold diagnoses valid? *American Journal of Psychiatry*, 163, 1720-1729.
- Gordon, M., Antshel, K., Faraone, S., Barkley, R., Lewandowski, L., Hudziak, J. J., . . . Cunningham, C. (2006). Symptoms versus impairment: The case for respecting DSM-IV's criterion D. *Journal of Attention Disorders*, 9, 465-475.
- Haslam, N., Williams, B., Prior, M., Haslam, R., Graetz, B., & Sawyer, M. (2006). The latent structure of attention-deficit/hyperactivity disorder: A taxometric analysis. *Australian and New Zealand Journal of Psychiatry*, 40, 639-647.
- Jensen, P. S., & Members of the MTA Cooperative Group. (2002). ADHD comorbidity findings from the MTA study: New diagnostic subtypes and their optimal treatments. *Defining psychopathology in the 21st century: DSM-V and beyond* (pp. 169-192). Arlington, VA, US: American Psychiatric Publishing.
- Jensen, P. S., Martin, D., & Cantwell, D. P. (1997). Comorbidity in ADHD: Implications for research, practice, and DSM-V. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 1065-1079.
- Karam, R. G., Bau, C. H. D., Salgado, C. A. I., Kalil, K. L. S., Victor, M. M., Sousa, N. O., . . . Grevet, E. H. (2009). Late-onset ADHD in adults: Milder, but still dysfunctional. *Journal of Psychiatric Research*, 43, 697-701.
- Kessler, R. C., Adler, L., Barkley, R., Biederman, J., Connors, C. K., Demler, O., . . . Zaslavsky, A. M. (2006). The prevalence and correlates of ADHD in the United States: Results from the National Comorbidity Survey Replication. *American Journal of Psychiatry*, 163, 716-723.
- Lahey, B. B., Pelham, W. E., Loney, J., Lee, S. S., & Willcutt, E. (2005). Instability of the DSM-IV subtypes of ADHD from preschool through elementary school. *Archives of General Psychiatry*, 62, 896-902.
- Lewandowski, L., Lovett, B. J., Gordon, M., & Antshel, K. (2006). *ADHD Report*, 14, 8-11.
- Mash, E. J., & Barkley, R. A. (2003). *Child psychopathology* (2nd ed.). New York: Guilford.
- McGough, J. J., & Barkley, R. A. (2004). Diagnostic controversies in adult attention deficit hyperactivity disorder. *American Journal of Psychiatry*, 161, 1948-1956.
- McGough, J. J., & McCracken, J. T. (2006). Adult attention deficit hyperactivity disorder: Moving beyond DSM-IV. *American Journal of Psychiatry*, 163, 1673-1675.
- Milich, R., Balentine, A. C., & Lynam, D. R. (2001). ADHD combined type and ADHD predominantly inattentive type are distinct and unrelated disorders. *Clinical Psychology: Science and Practice*, 8, 463-488.
- Nigg, J. T., Willcutt, E. G., Doyle, A. E., Sonuga-Barke, E. J. S. (2004). Casual heterogeneity in attention-deficit/hyperactivity disorder: Do we need neuropsychologically impaired subtypes? *Biological Psychiatry*, 57, 1224-1230.
- Pliszka, S. R. (2006). Subtyping ADHD based on comorbidity. *ADHD Report*, 14, 1-5.
- Ramsay, J. R., & Rostain, A. L. (2006). Issues in ADHD in adults. *ADHD Report*, 14, 5-8.
- Rohde, L. A. (2008). Is there a need to reformulate attention deficit hyperactivity disorder criteria in future nosologic classifications? *Child and Adolescent Psychiatric Clinics of North America*, 17, 405-420.
- Woo, S. M., & Keatinge, C. (2008). *Diagnosis and treatment of mental disorders across the lifespan*. Hoboken, NJ: John Wiley & Sons.

Bio

Allison S. Bell is currently a doctoral student in the University of Iowa's Counseling Psychology program. She holds a Master's degree in Counseling and Student Personnel Psychology from the University of Minnesota.