

Assessment of Adult ADHD: Current Guidelines and Issues

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Historically, Attention-deficit/Hyperactivity Disorder (ADHD) has been conceptualized as a childhood disorder. Results from longitudinal studies published within the past 15 years have altered this view. Research findings indicate that for approximately 50% of children with ADHD, the symptoms of inattention, hyperactivity, and impulsivity persist into adulthood and continue to cause difficulties in academic, occupational, and social functioning. The growing recognition and acceptance of ADHD as a valid adult disorder has resulted in an increased demand for diagnostic assessments by adults. This paper will present the most current information available on standard assessment procedures and outline limitations in our knowledge that need to be addressed in future research.

Key words: Attention-deficit/Hyperactivity Disorder, adulthood, assessment, assessment criteria.

El trastorno por déficit de atención con hiperactividad (TDAH) se ha considerado, históricamente, como un trastorno propio de la infancia. Los resultados de los estudios longitudinales, publicados durante los últimos 15 años, han cambiado este punto de vista. Los hallazgos de la investigación indican que aproximadamente un 50% de los niños con TDAH continúan presentando, durante la edad adulta, síntomas de desatención, hiperactividad e impulsividad; estos síntomas dificultan su funcionamiento académico, laboral y social. El creciente reconocimiento y aceptación del TDAH como un trastorno de la edad adulta ha dado lugar a un aumento de la demanda de evaluación y diagnóstico, por parte de los adultos. Este artículo presenta la información más actualizada disponible sobre los procedimientos estandarizados de evaluación, y esboza las limitaciones que, a nuestro juicio, deben ser abordadas en la investigación futura.

Palabras clave: Trastorno por déficit de atención con hiperactividad, edad adulta, evaluación, criterios de evaluación.

ADHD Defined

Attention-deficit hyperactivity disorder (ADHD) is a mental disorder that is characterized by high levels of inattention and/or hyperactivity/impulsivity. Individuals with high levels of inattentive symptoms typically have difficulty concentrating or focusing during important activities, are easily distracted by visual or auditory stimuli in their environment, and tend to daydream when they should be focusing on tasks. Because of their poor concentration abilities, they tend to make careless mistakes and often leave projects unfinished. Tasks that require sustained effort, such as doing household taxes, are very difficult to complete. They often appear lazy and disorganized as a result of their high levels of inattention. Individuals with high levels of hyperactive/impulsive symptoms may fidget, move around, or talk more than would be expected of someone their age. They are impulsive, interrupting conversations and becoming easily annoyed when waiting in lines (e.g., at the bank or grocery store). The hyperactive/impulsive symptoms may cause individuals to appear immature or rude.

The most commonly used diagnostic system for mental disorders in North America is the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994). In the current edition of the DSM (APA, 1994), there are two main groups of ADHD symptoms: nine inattentive and nine hyperactive/impulsive symptoms. The hyperactive/impulsive symptoms are combined into one group because research has indicated that they measure one underlying construct (Bauermeister, Alegria, Bird, Rubio-Stipec, and Canino, 1992; DuPaul *et al.*, 1998). From the 18 DSM-IV symptoms for ADHD, three subtypes of the disorder can be distinguished. Determining which subtype of ADHD a person has depends on the number and pattern of symptoms that are displayed: ADHD-Predominantly Inattentive subtype is diagnosed when an individual displays at least six of the nine inattentive symptoms (see Table 1), ADHD-Predominantly Hyperactive/Impulsive subtype is reserved for individuals who display at least six of the nine hyperactive/impulsive symptoms (see Table 2). Finally, ADHD-Combined subtype is diagnosed when individuals have at least six of both the nine inattentive and nine hyperactive/impulsive symptoms (see Table 1 and 2).

TABLE 1. DSM-IV INATTENTIVE SYMPTOMS OF ADHD

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| <ol style="list-style-type: none"> 1. Often fails to give close attention to details or makes careless mistakes in schoolwork, work or other activities. 2. Often has difficulty sustaining attention in tasks or play activities. 3. Often does not seem to listen when spoken to directly. 4. Does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions). 5. Often has difficulty organizing tasks and activities. 6. Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as school work or homework). 7. Often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools). 8. Is often easily distracted by extraneous stimuli. 9. Is often forgetful in daily activities. |
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TABLE 2. DSM-IV HYPERACTIVE/IMPULSIVE SYMPTOMS OF ADHD

1. Often fidgets with hands or feet or squirms in seat.
2. Often leaves seat in classroom or in other situations in which remaining seated is expected.
3. Often runs about or climbs excessively in situations in which it is inappropriate.
4. Often has difficulty playing or engaging in leisure activities quietly.
5. Is often «on the go» or often acts as if «driven by a motor».
6. Often talks excessively.
7. Often blurts out answers before questions have been completed.
8. Often has difficulty awaiting turn.
9. Often interrupts or intrudes on others.

As outlined in the DSM-IV (APA, 1994), the symptoms of ADHD must be chronic, pervasive, impairing, and severe for a diagnosis to be made. In other words, the symptoms should have originated in early childhood, been present consistently over time, occur in more than one situation, and be severe enough to interfere with daily living (*i.e.*, school, work, and/or social activities). Importantly, the symptoms have to be inconsistent with the patient's developmental level and intellectual ability.

Persistence of ADHD into Adulthood

Traditionally, ADHD was conceptualized as a childhood disorder that was outgrown in puberty or adolescence (Laufer, Denhoff, and Solomons, 1957). This belief most likely arose for several reasons. Among the possible explanations are (1) overt hyperactive behaviour, the most visible characteristic of the disorder, is known to decrease with age (Lahey *et al.*, 1994; Murphy and Gordon, 1998;), (2) referrals may decrease because people who tend to complain about the symptoms (*e.g.*, parents, teachers) have less contact with children during adolescence (Murphy and Gordon, 1998), and (3) individuals with ADHD may adapt their lifestyle to their ADHD symptoms so the degree of impairment decreases (Weiss, Trokenberg-Hechtman, and Weiss, 1999).

Several landmark studies have changed the view of ADHD as childhood disorder. Weiss and Hechtman (1993) and Mannuzza *et al.* (1993) conducted separate longitudinal studies that followed children diagnosed with ADHD into adulthood. Both Weiss and Hechtman (1993) and Mannuzza *et al.* (1993) found that in adulthood, these individuals continued to experience and struggle with ADHD symptoms. The percentage of ADHD children who exhibited ADHD symptoms as adults varied between the two studies due to methodological differences: Weiss and Hechtman (1993) measured the persistence of debilitating ADHD symptoms and found that 66% of the adults reported impairment in daily living from one or more symptom of ADHD. Mannuzza *et al.* (1993) measured the percentage of ADHD children who met full DSM-III-R (APA, 1987) diagnostic criteria for ADHD in adulthood and found that 20% of the sample met this more stringent

criterion. A more recent longitudinal study has measured the persistence of ADHD into adulthood using statistical deviation from age-appropriate norms as a clinical threshold and found that approximately 50-60% of children continue to have ADHD as adults (Barkley, 1998).

In conclusion, although estimates of the percentage of children who will have ADHD in adulthood varies across studies, the fact that ADHD does persist in some cases has been firmly established. Additional support for the validity of adult ADHD comes from research studies indicating family aggregation, common clinical correlates (*e.g.*, comorbid disorders and impairments), a predictable course, and reliable treatment response (*i.e.*, stimulant medication) (see Faraone *et al.*, 2000 for a review).

Assessment of Adult ADHD

Although there are no epidemiological studies of ADHD in adults, researchers estimate that between 4% and 5% of the adult population has ADHD (Heiligenstein, Conyers, Berns, and Smith, 1998; Murphy and Barkley, 1996). These figures suggest that adult ADHD may be as prevalent as adult depression. However, because adult ADHD has not been recognized as a valid diagnosis until recently, current structured diagnostic interviews for adults do not include assessments for ADHD. Given this, it is essential that mental health professionals (1) become aware of adult ADHD as a diagnostic possibility and (2) become educated on how to identify this previously unrecognized population. It is interesting to note that sex ratio differences observed in clinic-referred children with ADHD are diminished in clinic-referred adults, with an equal number of men and women being referred (Spencer, Biederman, Wilens, and Faraone, 1994). What follows is the current standard for assessing ADHD in adults.

Medical Examination

Prior to a psychological assessment for adult ADHD, patients should undergo a medical examination to rule out physiological conditions that could mimic ADHD symptoms (*e.g.*, hyperthyroidism, a heart condition, head injury) and to identify possible medical contraindications to stimulant treatment such as hypertension. After a medical explanation for the symptoms has been ruled out, a psychological assessment can be carried out.

Rating Scales: For Assessing Child and Adult ADHD Symptoms

The assessment of adult ADHD is similar in many ways to the assessment of child ADHD. First, clinicians need to establish the number of DSM-IV symptoms experienced by the patient, both during their childhood and in the past 6

months. The retrospective assessment of child ADHD symptoms is considered by many experts to be the most important component of the diagnosis because childhood onset of ADHD is consistent with our current understanding of ADHD as a neuro-developmental disorder that originates in childhood (APA, 1994; Barkley, 1998). Although patients can be diagnosed with ADHD for the first time in adulthood, it is assumed that these individuals have always had ADHD but their condition was not detected earlier. Thus, mental health professionals in North America do not recognize adult-onset ADHD.

Childhood Symptoms of ADHD

To assess whether the patient exhibited clinically significant ADHD symptoms in childhood, clinicians may use the DSM-IV ADHD symptoms and cutoff criteria which stipulates that at least six of the nine inattentive and/or six of the nine hyperactive/impulsive symptoms must have been present in childhood. Alternatively, clinicians may use a DSM-IV-based self-report rating scale that asks patients to rate how often they experienced the 18 ADHD symptoms in childhood. Barkley (1998) has published a 4-point, DSM-IV-based ADHD rating scale with adult norms for the retrospective recall of childhood ADHD symptoms. The benefit of using a rating scale is that clinical significance can be assessed using a standard deviation score from the mean ADHD ratings derived from a normative sample. In other words, a score would be considered high relative to the average score reported by individuals of the same age group trying to recollect the same child symptoms. Another option to assess childhood symptoms of ADHD is the Wender Utah Rating Scale (WURS; Ward, Wender, and Reimherr, 1993). Ward *et al.* (1993) found that a subset of 25-items from the WURS distinguished adults with ADHD from a normal and clinical control group.

If possible, a collateral rater who knew the patient as a child (*e.g.*, spouse, teacher, sibling) should be involved in completing the rating scale. There are two reasons for including a collateral rater: (1) ADHD children tend to underreport their own symptoms (Danckaerts, Heptinstall, Chadwick, and Taylor, 1999). Therefore, as adults, these individuals may underreport childhood symptoms and (2) even if they had insight into their symptoms as children, their retrospective recall may be inaccurate. Thus, a collateral rater may help gather evidence about childhood symptoms of ADHD.

Adult Symptoms of ADHD

To assess current DSM-IV ADHD symptoms, clinicians may use the DSM-IV items and cut-off criteria. However, expert consensus suggests that clinicians use rating scales developed specifically for adults with ADHD (*e.g.*, Conners' Attention-Deficit/Hyperactivity Disorder Rating Scale, CAARS; Conners, 1999). The CAARS is a rating scale that includes the 18 DSM-IV items for ADHD and uses deviation from age-appropriate norms to establish clinical cut-off scores for symptoms. Again, using age-appropriate norms to define clinical significance is desirable because a high score is assessed relative to how the average person in the

same age range scored, thus respecting developmental variations in behaviour. Consistent with child assessments for ADHD, the CAARS and similar rating scales should be completed by the patient and another person who knows the patient well (*e.g.*, spouse, parent, friend, etc) to gain another perspective on current symptoms. Another self-report rating scale for adults is the Brown Attention-Deficit Disorder Scale for Adults (BADDs; Brown, 1996).

Clinical Interviews: For Chronicity, Pervasiveness, and Impairment

Rating scales of ADHD symptoms are useful for assessing childhood and current symptoms, but as mentioned earlier, a symptom count is only one part of the diagnostic process. An adult ADHD assessment should include measures that assess chronicity, pervasiveness, and impairment. These elements are best captured in a clinical interview. Again, including a collateral rater in the interview (such as a parent) is often helpful for obtaining information about chronicity (*e.g.*, the patients' developmental history), pervasiveness (*e.g.*, whether symptoms are present in multiple situations), and areas of impairment (*e.g.*, social relationships, time management, parenting, school). Evidence of impairment, although easily overlooked in an assessment, is essential because symptoms must interfere with daily living to constitute a disorder (Wakefield, 1997).

A clinical interview should begin with a query about the patient's reason for the referral. The explanation given by the patient can provide valuable information about their life experiences and their knowledge about ADHD (Weiss, Trokenberg-Hechtman, and Weiss, 1999). Often, anecdotes can be revealing and helpful to the clinician (*e.g.*, an adult reveals that he was called lazy or immature as a child). A common scenario in our clinic is to have a parent seek an ADHD assessment because characteristics of the disorder resonated with them after completing questionnaires for their child's ADHD assessment.

The clinical interview should also include a thorough developmental history which covers information about the patient's early childhood (pre and perinatal events, developmental milestones, temperament) and early functioning at home, school, and with peers. Because child onset is an integral component to the diagnosis of adult ADHD, the clinician should monitor the patient's history for indications that ADHD symptoms were present and affected his or her social or academic functioning. Examples of the difficulties faced by children who have ADHD involve, but are not limited to, low self-esteem, poor peer relations, difficulty completing homework, academic problems, behavioural problems at home and/or at school.

The clinical interview should progress from childhood, adolescence to current functioning covering educational, occupational and social/interpersonal experiences in adulthood. Research gathered about adults with ADHD indicate that this population is more likely to report school-related problems, an erratic work record, lower marital satisfaction, and strained interpersonal relationships (Biederman *et al.*, 1993; Murphy and Barkley, 1996; Roy-Byrne *et al.*, 1997).

Comorbid/Differential Diagnoses

Adults with ADHD tend to have higher rates of mood, anxiety, substance use/abuse and disruptive behaviour disorders than the general population (Biederman *et al.*, 1993; Murphy and Barkley, 1996; Shekim *et al.*, 1990). Consequently, mental health professionals assessing adult ADHD need to carefully screen for comorbid disorders.

Careful attention should be taken when screening for other diagnoses because the symptoms of ADHD overlap with symptoms other mental disorders (*e.g.*, major depressive disorder, generalized anxiety disorder). For example, if an inability to maintain attention is reported, clinicians should try to determine whether the difficulties with attention are occurring because the patient is preoccupied with worries or because s/he is distracted by stimuli in their environment.

Concerns/Limitations of Assessment Criteria

As mentioned earlier, the criteria for diagnosing ADHD in adults is the same criteria outlined for children in the DSM-IV (APA, 1994). The DSM-IV criteria for ADHD consists of a symptom list with recommended cutoff scores, onset of symptoms before age 7, cross-situational pervasiveness, and the requirement of clinically significant impairment. Although the DSM-IV criteria offers the best guideline available to date for assessing adult ADHD, the criteria was developed using field trials of children between the ages of 4 to 16 years (Applegate *et al.*, 1995; Lahey *et al.*, 1994). Given this, there are limitations to applying DSM-IV criteria to adults.

DSM-IV symptom content and cutoff scores for ADHD

A central concern about applying DSM-IV criteria to adults is the developmental appropriateness of using symptoms and cutoff scores that were developed on children.

Symptom Content

The DSM-IV symptoms for ADHD contain references to play activities, homework, toys and games. Clearly, the content of these items are not relevant to the lives of adults. Adult rating scales have been developed that use the DSM-IV items but modify the wording to remove references that are inappropriate for adult assessments (Barkley, 1998; Conners *et al.*, 1999). The impact of changing the wording of the items waits empirical research. A second issue related to the DSM-IV symptoms for ADHD is that they tend to describe overt rather than subjective symptoms. The ADHD symptoms were most likely developed this way because assessments of children typically rely on parent and teacher ratings of child behaviour rather than on self-reports of internal states. Whether self-re-

ports of observer-oriented, behavioural symptoms such as «does not seem to listen when spoken to» or «acts like driven by a motor» are valid needs to be established. In the meantime, it is recommended that clinicians ask about underlying urges in addition to overt behaviours (Prince and Wilens, 2000). For example, a patient may be able to remain seated during meetings, but if they are spending so much energy trying to sit still that they miss out on what is being said, this is a significant piece of information.

Cutoff Scores

Research indicates that the symptoms of ADHD may decline with age, and therefore, the DSM-IV criteria may be too conservative when applied to adults, resulting in underdiagnosis (Millstein *et al.*, 1997). Murphy and Barkley (1996) and Heilingenstein *et al.* (1998) have conducted research indicating that using a cut-off score of between three to five symptoms (depending on the type of symptoms and age of the individual) may be more appropriate for adults than the child based requirement of six symptoms. The validity of changing the cutoff threshold awaits further research. In the meantime, clinicians should remain mindful that the requirement of six symptoms in the DSM-IV (APA, 1994) is based on child norms and may be overly stringent when applied to adults. As mentioned earlier, an alternative approach to using the DSM-IV (APA, 1994) cutoff scores for adults is to use ratings scales specifically developed for adults, such as the Conners' Adult ADHD Rating Scales (CAARS; Conners, 1999). The benefit of using the CAARS is that age and gender-based norms are available for scoring, there are separate forms for self-report and observers, and there is a short version of the CAARS that has good psychometric properties.

Age of Onset

Recently, researchers have raised questions about the empirical basis and clinical importance of establishing that ADHD symptoms were present prior to age 7, as outlined in the DSM-IV (APA, 1994). Barkley and Biederman (1997) argue that, whereas *childhood* onset of ADHD symptoms is essential, onset before the *precise age of 7* is not based on empirically derived knowledge about ADHD. More recently, Murphy and Gordon (1998) have recommended that the age of onset criterion for diagnosing adults with ADHD be relaxed to an onset of symptoms causing impairment prior to age 12 years. A decision to expand the window for the age of onset to 12 years should be made with caution as this issue awaits further empirical evidence.

Concerns with Self-reports of ADHD Symptoms

For both childhood and current symptoms of ADHD, there is conflicting evidence about the accuracy of adult self-reports. Some researchers have found

that adults with ADHD underestimate their current and childhood ADHD symptoms (Mannuzza *et al.*, 1993) whereas other researchers have found that adults with ADHD report more symptoms than collateral reporters (Murphy and Schachar, 2000). Clarifying whether adult self-reports of ADHD symptoms are accurate remains a task for researchers. In the meantime, it is recommended that symptom information be derived from the patient and a collateral reporter. When both sources report ADHD symptoms above or below clinical thresholds, the clinical decision is straightforward. When reports are inconsistent, the diagnostic decision will depend clinical judgment that is based on other information gathered in the interview.

Problems with Overlapping Symptoms

One concern with the diagnosis of ADHD is that inattention, a central feature of the disorder, is not unique to ADHD (Gordon and Barkley, 1999). Variations of inattention (*e.g.*, poor concentration, disorganization, distractibility) are found in symptom lists for disorders ranging from substance abuse, psychotic disorders, depression, anxiety, and mental retardation. This reality complicates the clinical presentation of adults with ADHD as the clinicians must determine whether there is a bona fide comorbid condition or whether the symptoms of ADHD are mimicking (or being mimicked) another disorder. As a first step, a structured clinical interview can be used to assess whether the individual meets diagnostic criteria for other psychiatric disorders. If an anxiety or mood disorder is also present, the clinician must determine whether the individual meets criteria for both disorders due to overlapping symptoms or because the individual has a comorbid disorder. This distinction can be difficult to make. Often, examining data gathered during the clinical interview can be useful as ADHD typically has an earlier onset (*i.e.*, early childhood) and a distinctive course (*e.g.*, academic, social, and behavioural problems) compared to anxiety and mood disorders. As mentioned earlier, clinicians may ask patients whether they are having problems concentrating because they are worrying or because they are easily distracted.

Assessment Methods to Avoid

Unfortunately, despite a lack of empirical evidence to support their use, we continue to hear anecdotal reports of clinicians relying on laboratory tests (*e.g.*, continuous performance tests), brain electrical activity mapping, imaging tests, positive response to pharmacological interventions, and observations of behaviour in the interview to assess ADHD. Although some of these measures or tests may be useful research tools, in isolation they are not valid tools for diagnosing ADHD. An ADHD assessment is a time-consuming process that should be performed by an experienced professional and the procedure cannot be reduced to interpreting the results from a single «test».

Summary and Future Directions

Adult ADHD has been called the «orphan diagnosis» (Spencer, Biederman, Wilens, and Faraone, 1994): Child clinicians tend to work exclusively with children, and adult clinicians are not trained to identify and diagnose ADHD. With the publication of landmark longitudinal studies and the subsequent media attention that adult ADHD has received, there is an increasing demand for this gap in the field of mental health to be filled. Empirical research is needed to determine the validity of the current assessment criteria (e.g., developmental appropriateness of the DSM-IV symptom list, accuracy of retrospective recall, validity of the age of onset requirement, how to establish differential diagnoses), and to learn more about the effects of this disorder on daily functioning. Until these issues can be resolved, clinical practice should be guided by current standards and updated regularly as new, empirically-derived information materializes. We hope the results of future research will provide this population with the same access to skilled diagnosis and treatment as currently exists in other areas of adult psychopathology.

REFERENCES

- American Academy of Child and Adolescent Psychiatry. (1997). Practice parameters for the assessment and treatment of children, adolescents, and adults with attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36 (suppl), 85S-121S.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Applegate, B., Waldman, I., Lahey, B. B., Frick, P. J., Ollendick, T., Garfinkel, B., Biederman, J., Hynd, G. W., Barkley, R. A., Greenhill, L., McBurnett, K., Newcorn, J., Kerdyk, L., & Hart, E. L. (1995). *DSM-IV field trials for attention deficit hyperactivity disorder: Factor analysis of potential symptoms*. Chicago: University of Chicago.
- Barkley, R. A. (1998). *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment* (2nd ed.). New York: Guilford Press.
- 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 (9), 1204-1210.
- Bauermeister, J. J., Alegria, M., Bird, H.R., Rubio-Stipec, M., & Canino, D. (1992). Are attentional-hyperactivity deficits unidimensional or multidimensional syndromes? Empirical findings from a community survey. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31, 423-431.
- Biederman, J., Faraone, S., Spencer, T., Wilens, T., Norman, D., Lapey, K. A., Mick, E., Lehman, B. K., & Doyle, A. (1993). *Patterns of psychiatric comorbidity, cognition, and psychosocial functioning in adults with attention deficit hyperactivity disorder*, 150, 1792-1798.
- Brown, T.E. (1996). *Brown Attention-Deficit Disorder Scales*. San Antonio, Texas: The Psychological Corporation. Harcourt, Brace, & Company.
- Conners, C.K. (1999). *The Conners adult ADHD rating scales*. Toronto: Multi-Health Systems.
- Danckaerts, M., Heptinstall, E., Chadwick, O., & Taylor, E. (1999). Self-report of attention deficit and hyperactivity disorder in adolescents. *Psychopathology*, 32, 81-92.
- DuPaul, G. J., Anastopoulos, A.D., Power, T.J., Reid, R., Ikeda, M.J., & McGoey, K. (1998). Parent ratings of attention-deficit/hyperactivity disorder symptoms: Factor structure and normative data. *Journal of Psychopathology and Behavioral Assessment*, 20, 83-102.
- Faraone, S.V., Biederman, J., Spencer, T., Wilens, T., Seidman, L.J., Mick, E., & Doyle, A. E. (2000). Attention-deficit/hyperactivity disorder in adults: An overview. *Biological Psychiatry*, 48, 9-20.
- Gordon, M., & Barkley, R.A. (1999). Is all inattention ADD/ADHD? *The ADHD Report*, 7, 1-7.
- Heiligenstein, E., Conyers, L. M. Berns, A. R. & Smith, M. A. (1998). Preliminary normative data on DSM-IV

- attention deficit hyperactivity disorder in college students. *Journal of American College Health*, 46, 185-188.
- Lahey, B. B., Applegate, B., McBurnett, K., Biederman, J., Greenhill, L., Hynd, G. W., Barkley, R. A., Newcorn, J., Jensen, P., & Richters, J. (1994). DSM-IV field trials for attention deficit hyperactivity disorder in children and adolescents. *American Journal of Psychiatry*, 151 (11), 1673-1685.
- Laufer, M.W., Denhoff, E., & Solomons, G. (1957). Hyperkinetic impulse disorder in children's behavior problems. *Psychosomatic Medicine*, 19, 38-49.
- Mannuzza, S., Gittelman-Klein, R., Bessler, A., Malloy, P., & LaPadula, M. (1993). Adult outcome of hyperactive boys: Educational achievement, occupational rank, and psychiatric status. *Archives of General Psychiatry*, 50, 565-576.
- Millstein, R.B., Wilens, T.E., Biederman, J., Spencer, T.J. (1997). Presenting ADHD symptoms and subtypes in clinically referred adults with ADHD. *Journal of Attention Disorders*, 2, 159-166.
- Murphy, K., & Barkley, R. (1996). Attention deficit hyperactivity disorder adults: Comorbidities and adaptive impairments. *Comprehensive Psychiatry*, 37 (6), 393-401.
- Murphy, K. R., & Gordon, M. (1998). Assessments of adults with ADHD. In R. A. Barkley (Ed.), *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment* (pp.345-369). New York: Guilford Press.
- Murphy, P. B., & Schachar, R. (2000). Use of self-ratings in the assessment of symptoms of attention deficit hyperactivity disorder in adults. *American Journal of Psychiatry*, 157 (7), 1156-1159.
- Prince, J. B., & Wilens, T. (2000). Diagnosis and treatment of adults with ADHD. In Pasquale J Accardo, Thomas A Blondis, Barbara Y Whitman & Mark A Stein (Eds.), *Attention Deficits and Hyperactivity in Children and Adults: Diagnosis, Treatment, Management* (2nd ed), New York: Marcel Dekker Inc.
- Roy-Byrne, P., Scheele, L., Brinkley, J., Ward, N., Wiatrak, C., Russo, J., Townes, B., & Varley, C. (1997). Adult attention deficit hyperactivity disorder: Assessment guidelines based on clinical presentation to a specialty clinic. *Comprehensive Psychiatry*, 38 (3), 133-140.
- Shekim, W.O., Asarnow, R.F., Hess, E., Zauha, K., & Wheeler, N. (1990). A clinical and demographic profile of a sample of adults with attention deficit hyperactivity disorder, residual state. *Comprehensive Psychiatry*, 31 (5), 416-425.
- Spencer, T., Biederman, J., Wilens, T., & Faraone, S.V. (1994). Is attention-deficit hyperactivity disorder in adults a valid disorder? *Harvard Review of Psychiatry*, 1 (6), 326-335.
- Stein, M.A., Sandoval, R., Szumowski, E., Roizen, N., Reinecke, M.A., Blondis, T.A. et al. (1995). Psychometric characteristics of the Wender Utah rating scale: Reliability and factor structure for men and women. *Psychopharm Bulletin*, 31, 423-431.
- Wakefield, J.C. (1997). Normal inability versus pathological disability: Why Ossorio's definition of mental disorder is not sufficient. *Clinical Psychology: Science and Practice*, 4, 249-258.
- Ward, M. F., Wender, P.H., Reimherr, F.W. (1993). The Wender Utah rating scale: An aid in the retrospective diagnosis of childhood attention deficit hyperactivity disorder. *American Journal of Psychiatry*, 150, 885-890.
- Weiss, G., & Hechtman, L. T. (1993). *Hyperactive children grown up: ADHD in children, adolescence, and adults* (2nd ed.). New York: Guilford Press.
- Weiss, M., Trokenberg-Hechtman, L., & Weiss, G. (1999). ADHD in adulthood: A guide to current theory, diagnosis, and treatment. Baltimore: Johns Hopkins University Press.
- Weiss, G., Hechtman, L., Milroy, T., & Perlman, T. (1985). Psychiatric status of hyperactives as adults: A controlled prospective 15 year follow-up of 63 hyperactive children. *Journal of the American Academy of Child Psychiatry*, 24 (2), 211-220.

