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Pepperdine University
Graduate School of Education and Psychology

ASSESSING ATTENTION-DEFICIT/HYPERACTIVITY DISORDER IN ADULTS:
A REVIEW OF RATING SCALES

A clinical dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Psychology

by

Sarah Beth Silverman

June, 2012

Drew Erhardt, Ph.D. – Dissertation Chairperson

This clinical dissertation, written by

Sarah Beth Silverman

under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements for the degree of

DOCTOR OF PSYCHOLOGY

Doctoral Committee:

Drew Erhardt, Ph.D., Chairperson

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Ani Dillon, Psy.D.

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DEDICATION

This dissertation is dedicated to

My parents

and

My husband

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Thank you to my dissertation chair, Drew Erhardt, Ph.D., and my committee members, Kathleen Eldridge, Ph.D. and Ani Dillon, Psy.D., for their contributions and participation in this project. A special thank you to Dr. Dillon for loaning her materials and resources, which was greatly appreciated. I was fortunate enough to have many friends and colleagues encouraging me along the way. Especially Krista Freece, Ph.D., who, despite the distance, nourished our friendship and was a great editor.

Without the support of my family, I would not have been able to complete this process. My grandmother and late grandfather have always supported my endeavors, rejoiced in my accomplishments, and are exemplifications of generosity. My parents instilled in me the importance of caring for others, and cultivated an ambitious, fun, confident, and loving environment for my growth. They have supported me in every possible way, and words cannot express my appreciation, gratitude, and love for them. My wish is to raise my own children in the same selfless and loving way. Thank you to my siblings for picking up the slack and dealing with a sibling who is a perpetual student. And thank you to my nieces and nephews for their inspiration, especially Hannah for her Friday night prayers that warmed my heart. And to my dogs who made me laugh when I wanted to cry, and who provided snuggles whenever they were needed. Finally, enough appreciation cannot be expressed to my husband, who has stood by me for the past ten years. His patient, understanding, and loving, caring nature cannot be matched. Here's to our future.

VITA

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EDUCATION

Pepperdine University, Los Angeles, CA
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APA Approved Program

California State University, Northridge, CA
Master of Arts, Clinical Psychology, 2006
Master's with Distinction
Thesis: Coping and Substance Use in College Students

University of California, Davis
Bachelor of Arts, 2004
Majors: Psychology, Communication

CLINICAL EXPERIENCE

Predoctoral Internship
Kaiser Permanente Department of Psychiatry and Addiction Medicine, San Diego, CA
APA Accredited
August 2009 – August 2010

- Child, adolescent, and adult individual therapy
- Child/adolescent/family intakes
- Psychological testing
- Adult neuropsychological testing primarily referred by neurology, neurosurgery, and primary care
- Group therapy including: DBT, anger management, couples communication, ADHD, behavior modification for children, and anxiety management
- Minor rotation in chemical dependency recovery program
- Minor rotation at Family Justice Center conducting intakes and developing safety plans for victims of domestic violence
- Minor rotation in emergency psychiatric assessments and disposition planning

Doctoral Practicum
University of Southern California, Student Counseling Services
August 2008 - May 2009

- Intake assessments
- Individual therapy
- Co-Leader: Living with Loss Support Group
- Process observation and debriefing: Graduate Students' Process Group

Doctoral Practicum

Children's Hospital Los Angeles, Neuropsychological Assessment

August 2007 – December 2008

- Completed comprehensive neuropsychological evaluations for children, adolescents, and adults to determine functional status, including cognitive strengths and weaknesses
- Wrote comprehensive reports, including recommendations, for patients most commonly diagnosed with brain tumors, leukemia, neurofibromatosis, cystic fibrosis, and sickle cell disease
- Conducted intake interviews, feedback sessions, school consultations, and multidisciplinary case consultations
- Completed neuropsychological evaluations for Children's Oncology Group national research studies
- Participated in weekly interdisciplinary neural tumors team meeting with physicians, social workers, nurses, pharmacists, radiation oncologists, research assistants, and school reintegration personnel
- Participated in "hands on" weekly brain cutting/autopsy lectures provided by neurologist and pathologist on both child and adult brains

Psychology Trainee

Pepperdine Psychological and Educational Clinic, Los Angeles, CA

August 2007 - June 2008

- Adult individual therapy
- Couples therapy
- Conducted intake assessment interviews, determined diagnoses, and provided appropriate treatment plans

Doctoral Practicum

Corrine A. Seeds University Elementary School, Los Angeles, CA

September 2006 – June 2007

- Child individual therapy
- Child group therapy- social skills training
- Parent intake and feedback sessions
- Classroom and yard observations
- Woodcock-Johnson Achievement Testing
- Consultations with administrators and teachers

Neurophysical Trainer

The Drake Institute of Behavioral Medicine, Northridge, CA

March 2006 – July 2006

- Neurofeedback for children and adults diagnosed with ADHD and Autism
- Monitored and coached children and adults using computer programs (Fast ForWord and Captain's Log)

Psychology Extern

Mood and Anxiety Clinic, California State University, Northridge

August 2005 – June 2006

- Adult individual therapy, primarily utilizing a cognitive-behavioral approach
- Applied behavioral techniques such as relaxation therapy, and cognitive techniques such as thought logs

Helpline, California State University, Northridge

March 2006 – June 2006

- Answered crisis hotline providing information, referrals and resources, emotional support, and crisis intervention

Psychology Extern, Child and Adolescent Assessment Clinic, California State University, Northridge

August 2004 – December 2005

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- Parent intake interviews and feedback sessions
- Classroom and behavioral observations

RESEARCH EXPERIENCE

Research Assistant

Pepperdine University, Los Angeles, CA

September 2007 – September 2008

- Research grant for development and implementation of web-based booster sessions after a social skills/parent training program
- Website development and reliability testing

Research Assistant

California State University, Northridge

Health Psychology Laboratory

March 2005 – June 2006

- Scored, input, and analyzed SPSS data collected from both an elderly and internet project, and a depression and coping study in college students

Research Assistant

University of California, San Diego

Sleep Disorders Laboratory

June 2003 – September 2003

- Research project examining the relationship between fatigue and sleep in women with breast cancer
- Prepared equipment and documents for overnight sleep experiment
- Entered and cross-checked experimental data in Microsoft Access database

ABSTRACT

Rating scales are an integral component in the assessment of attention-deficit/hyperactivity disorder (ADHD) in adults, and a variety of scales designed for this purpose have been developed. Existing reviews of adult ADHD rating scales are limited with respect to their focus, coverage of some clinically relevant content, and/or their reflection of the most recent scales and data. Thus, the current project aimed to identify and thoroughly review current adult ADHD rating scales best suited for clinical practice. Inclusionary and exclusionary criteria aimed at identifying readily available, clinically-oriented scales for assessing ADHD symptoms in adults. The criteria yielded the following seven rating scales, which were the focus of the current review: the Adult Attention Deficit Disorders Evaluation Scale (A-ADDES), the Adult ADHD Self-Report Scale v1.1 Symptom Checklist (ASRS), the Attention-Deficit Scales for Adults (ADSA), the Barkley Adult ADHD Rating Scale-IV (BAARS-IV), the Brown Attention-Deficit Disorder Rating Scales for Adults (BADDS), the Conners' Adult ADHD Rating Scales (CAARS), and the Wender Utah Rating Scale (WURS). The subsequent review, based on an extensive search of relevant literature (including but not limited to user and technical manuals), provides descriptive information on each scale, its development, derived factors, scoring, normative sample(s), psychometric properties, and clinical utility. Implications of the findings for clinicians seeking to select rating scales for screening, diagnosis, and/or treatment monitoring are discussed, as are future directions for the development of adult ADHD rating scales.

Review of the Literature

It was long believed that attention-deficit/hyperactivity disorder (ADHD) was a childhood-specific diagnosis and that most children “grew out of” the disorder by the time they reached late adolescence or early adulthood (Mannuzza & Klein, 2000). Not until the mid to late 1980s did researchers document clear evidence that many adults who had been diagnosed in childhood continued to experience significant symptoms of ADHD (Kessler, Adler, Barkley et al., 2005; Kooij et al., 2005; Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1993; Millstein, Wilens, Biederman, & Spencer, 1997; Spencer, Biederman, Wilens, & Faraone, 1994). The subsequent accumulation of evidence suggesting that a majority of children diagnosed with ADHD have significant symptoms that persist into adulthood (Barkley, Fischer, Smallish, & Fletcher, 2002, 2006; Klein & Mannuzza, 1991; Mannuzza et al., 1993; Weiss & Hechtman, 1993), along with additional studies documenting impairments in clinic-referred adults seeking services for ADHD (Barkley, Murphy, & Fischer, 2008; Goldstein & Ellison, 2002; Spencer, 2004), have resulted in ADHD now being a well-established adult (as well as childhood) diagnosis. Although it is difficult to determine the true prevalence of ADHD in adults due to underreporting and diagnostic challenges, it is estimated from both childhood follow-up research and from general population epidemiological studies that approximately 5% of the United States adult population suffers from the disorder. Based on 2005 Census Bureau estimates, this figure translates into over 11 million individuals (Barkley et al., 2008; Kessler et al., 2006). Notably, ADHD now appears to be one of the most common psychiatric disorders in adults (Faraone & Biederman, 2005). As occurs among children, ADHD in adults may be more common among males, with the prevalence among women estimated to be 3% compared to 5% in men (Kessler et al.,

2006). Although there is some suggestive evidence to the contrary (e.g., ADHD being significantly correlated with non-Hispanic ancestry; Kessler et al., 2006), the extant data generally suggests similar rates of ADHD across cultures (Goldman, Genel, Bezman, & Slanetz, 1998). However, due to cultural norms and expectations, there is variability in how symptoms are perceived and treated (Adler & Cohen, 2004).

Diagnostic Considerations

When discussing the prevalence rate of ADHD in adults, it is important to note that current figures might actually be underestimates (Barkley et al., 2002; Kooij et al., 2005). A variety of factors might contribute to the under-diagnosis of ADHD in adults. First, the criteria presented in the current Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association [APA], 2000) were based solely upon child and adolescent symptoms of ADHD (Applegate et al., 1997; Lahey et al., 1994) and are, at least in part, inappropriate for adult diagnosis (Barkley et al., 2008). Further, ADHD is thought of as a developmental disorder (Barkley, 1998); however the current DSM-IV-TR criteria do not reflect age-related changes in the presentation of the disorder and thereby may not be suitable for accurately identifying many cases of ADHD in adults (Faraone, Biederman, Feighner, & Monuteaux, 2000; McGough & Barkley, 2004). Given the developmental perspective, the presence of ADHD at any age must be diagnosed using age-relative thresholds (Barkley et al., 2002; Simon, Czobor, Balint, Meszaros, & Bitter, 2009). However, such thresholds are not provided in the DSM-IV-TR which, given the fact that base-rates of ADHD symptoms decline with age in the general population, contributes to both the declining diagnostic rate with age (DuPaul, Power, Anastopoulos, & Reid, 1998; Faraone et al., 2006; Hart et al., 1995) and the likely

under-diagnosis of actual cases of adult ADHD (Faraone & Biederman, 2005; Mannuzza, Klein, & Moulton, 2003; McGough & Barkley, 2004; Murphy & Barkley, 1996b). An additional factor complicating the assessment of adult ADHD is the difficulty in establishing the diagnosis prior to age seven. It is difficult for adult patients to recall or obtain accurate information regarding their behavior in early childhood. Such retrospective recall has been shown to be highly vulnerable to historical inaccuracy, incompleteness, and/or distortion (Hardt & Rutter, 2004; Lewandowski, Lovett, Coddington, & Gordon, 2008; Zucker, Morris, Ingram, Morris, & Bakeman, 2002). There are data supporting both the validity of later-onset ADHD, and that the age of onset criterion is too stringent for the diagnosis of adults (Faraone et al., 2006).¹ Given that they may represent obstacles to accurate diagnosis, the factors noted above (among others) suggest that the current DSM system is neither optimal nor sufficient for diagnosing adults with ADHD.

Diagnostic Criteria and Adult Manifestation

As per the criteria set forth in the current DSM-IV-TR (APA, 2000), ADHD is comprised of three core symptoms: inattention, hyperactivity, and impulsivity. As noted, because the symptoms in the DSM-IV-TR are based solely on child and adolescent expressions of the disorder (Applegate et al., 1997; Lahey et al., 1994), they are more applicable to youth as opposed to adults. In children, inattention often manifests in difficulty paying attention in class, difficulty sustaining attention, not following the rules, and being easily distracted (APA, 2000). The symptoms of hyperactivity include

¹ This problem may be reduced by the proposed revision to the age of onset criterion for DSM-V, which is expanded to the presence of characteristic symptoms by age 12 (APA, 2012).

fidgiting or squirming in one's seat, often leaving one's seat, climbing, running, and talking excessively; while impulsive symptoms encompass blurting out answers before questions are completed, difficulty awaiting one's turn, and interrupting others.

According to the criteria (APA, 2000), the onset of symptoms has to be before age seven, and must be present in two or more settings, persistent over time, and associated with impairment in functioning. The DSM-IV-TR currently identifies three subtypes of ADHD: combined type (meeting criteria for both inattention and hyperactivity/impulsivity), predominantly inattentive type (six or more symptoms for inattention have been met but not for hyperactivity/impulsivity), and predominantly hyperactive-impulsive type (six or more symptoms for hyperactivity/impulsivity have been met but not for inattention; see Appendix B for the full DSM-IV-TR criteria for ADHD).

As noted above, the current DSM conceptualization of ADHD may not accurately reflect the way in which the disorder manifests in adults (Barkley, 1998; Barkley et al., 2008; Conners & Jett, 1999; Faraone et al., 2000; McGough & Barkley, 2004; Murphy & Barkley, 1996a; Wender, 2000). By and large, however, the presenting complaints in adults with ADHD "are quite consistent with conceptualizations of the disorder as involving impairments in attention, inhibition, and self-regulation" (Barkley, 1998, p. 211). In adults, inattention may manifest itself in various ways, such as difficulty sustaining attention while reading or completing paperwork, trouble staying in a confined space, poor time management, procrastination, and misplacing things (Adler, 2004; Adler & Cohen, 2004; Barkley, 1998; Barkley et al., 2008; Conners & Jett, 1999; Montano, 2004). Regarding hyperactivity in adults, there may be significant inner restlessness,

difficulty being able to maintain a reciprocal conversation, self-selecting active jobs, talking excessively, and feeling uncomfortable sitting through meetings (Adler & Cohen, 2004; Conners & Jett, 1999; Weiss & Weiss, 2004). Further, symptoms of impulsivity may manifest by being unwilling to wait in line, poor decision making, impulse shopping, frequent job changes, driving too fast, being quick to anger, and having a low frustration tolerance (Adler & Cohen, 2004; Barkley et al., 2008; Conners & Jett, 1999, Montano, 2004; Weiss & Weiss, 2004).²

Risks Associated with ADHD

There is substantial research documenting the risks associated with ADHD in adulthood. These include functional impairments in many areas of life including academic achievement, employment, social/marital functioning, antisocial activities, and driving. Follow-up studies have shown that adults diagnosed with ADHD, in contrast to their non-ADHD peers, have less education, more failed classes, higher rates of grade retention, lower high school graduation rates, and lower rates of college attendance (Able, Johnston, Adler, & Swindle, 2007; Barkley, Fischer, Smallish, & Fletcher, 2006; Fischer, Barkley, Edelbrock, & Smallish, 1990; Lambert & Hartsough, 1998; Mannuzza et al., 1993; Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1998; Marks, Newcorn, & Hallperin, 2001; Weiss & Hechtman, 1993). Furthermore, individuals with ADHD tend to be more disruptive at work, are rated by employers as worse in job performance, and are more likely to be fired or laid off (Barkley et al., 2006; Barkley & Murphy, 1998; Kessler et al., 2006; Weiss & Hechtman, 1993). Socially, adults with ADHD are said to

² Among the changes currently being considered for the next revision of the DSM is revising the description of the symptoms of ADHD so as to better capture the expression of the disorder in adults (APA, 2012).

listen less and interrupt more, report more unstable personal relationships (DeQuiros & Kinsbourne, 2001; Fischer & Barkley, 2006; Murphy & Barkley, 1996a), and have higher rates of separation and divorce (Biederman et al., 1993; Kessler et al., 2006).

Additionally, they often have difficulties around organization, setting and adhering to routines, stress tolerance, and mood stability (Adler & Cohen, 2004; Barkley et al., 2008; Wender, 1995; Wolf & Wasserstein, 2001). Further, individuals diagnosed with ADHD have been found to have sexual intercourse starting at an earlier age than control groups, to have more sexual partners, be more likely to have conceived a pregnancy, and are more likely to have contracted a sexually transmitted disease (Flory, Molina, Pelham, Gnagy, & Smith, 2006). In addition, adults with ADHD are at a greater risk of using tobacco, alcohol, marijuana, and other substances (Barkley et al., 2008; DeQuiros & Kinsbourne, 2001; Kollins, McClernon, & Fuemmeler, 2005; Lambert & Hartsough, 1998; Murphy & Barkley, 1996a; Tercyak, Peshkin, Walker, & Stein, 2002; Torgersen, Gjervan, & Rasmussen, 2006; Weiss & Hechtman, 1993; Whalen, Jamner, Henker, Delfino, & Lozano, 2002). Moreover, adults with ADHD have been found to have engaged in more antisocial activities such as shoplifting, stealing, breaking and entering, carrying an illegal weapon, and to be at greater risk of being arrested (Babinski, Hartsough, & Lambert, 1999; Barkley, Fischer, Smallish, & Fletcher, 2004; Barkley et al., 2008; Gudjonsson, Sigurdsson, Gudmundsdottir, Sigurjonsdottir, & Smari, 2010; Torgersen et al., 2006). Finally, studies examining department of motor vehicles (DMV) records have established that adults with ADHD are involved in more motor vehicle accidents and receive more speeding tickets than their non-ADHD counterparts (Barkley

& Cox, 2007; Barkley et al., 2008; Fried et al., 2006; Knouse, Bagwell, Barkley, & Murphy, 2005).

Comorbidities

In addition to being at increased risk for impairments across these various domains of functioning, adults with ADHD experience elevated rates of comorbid psychiatric disorders. Studies have shown that 21 to 53% of adults with ADHD have some form of substance abuse or dependence (Barkley et al., 2006; Barkley, Murphy, & Kwasnik, 1996; Kalbag & Levin, 2005; Murphy & Barkley, 1996a; Murphy, Barkley, & Bush, 2002; Roy-Byrne et al., 1997; Shekim, Asarnow, Hess, Zaucha, & Wheeler, 1990; Tercyak, et al., 2002). Across their lifetimes, approximately 45% experience alcohol abuse, 51% cannabis abuse, 49% amphetamines abuses, and 16 % opiate abuses (Torgersen et al., 2006). Anxiety disorders (52%) also appear to be over-represented in the adult ADHD population, including 24 to 43% who experience generalized anxiety disorder (Barkley et al., 1996; Biederman et al., 1993, 2006; Shekim et al., 1990; Weiss & Hechtman, 1993). With respect to mood disorders, 16 to 31% report symptoms of depression (Barkley et al., 1996; Biederman et al., 1993, 2006; Fischer, Barkley, Smallish, & Fletcher, 2002; Roy-Byrne et al., 1997; Weiss & Hechtman, 1993), with 19 to 37% experiencing dysthymia (Murphy et al., 2002; Roy-Byrne et al., 1997; Shekim et al., 1990). Although research into how ADHD correlates with personality disorders is complex and mixed, studies have shown that ADHD may contribute to antisocial personality disorder in 7 to 44% of the adult ADHD population (Biederman et al., 1993, 2006; Fischer et al., 2002; Kessler et al., 2006; Shekim et al., 1990; Torgersen et al., 2006; Weiss & Hechtman, 1993).

Demand for Adult ADHD Assessments

The growing evidence supporting ADHD in adults as a legitimate, common, and impairing disorder has led to an increased demand for assessments of ADHD in adults (Murray & Weiss, 2001). Also contributing to this trend has been increased media and web-based attention to the topic of adult ADHD, including the publication of books and articles, which has increased public awareness of the disorder (Epstein, Conners, Sitarenios, & Erhardt, 1998; Hallowell & Ratey, 1994; Miller, 1993 as cited in Biederman, 2004; Murphy & Adler, 2004; Murphy & LeVert, 1995; Roy-Byrne et al., 1997; Wallis, 1994). Consequently, the number of clients requesting evaluations for ADHD has increased (Biederman, 2004; McGough & Barkley, 2004; Murphy & Adler, 2004). Thus, it is becoming increasingly important for clinicians to be familiar with current guidelines and measures for assessing ADHD in adult populations.

Assessing ADHD in Adults

Various professional organizations, including the National Resource Center on ADHD (2003), The National Institutes of Health (1998), and the American Academy of Family Physicians (Searight, Burke, & Rottnek, 2000), have produced guidelines for assessing adult ADHD. Consistent across these guidelines is the view that the current standard of practice for assessing ADHD in adults comprises a multimodal approach including an in-depth clinical interview, review of the client's records, symptom rating scales, and psychological testing (Barkley, 1998; Montano, 2004; Murray & Weiss, 2001). The clinical interview can be structured or semi-structured and includes gathering information in areas such as development, past school performance and behavior, occupational and social functioning, symptoms of ADHD, and the degree to which these

symptoms are interfering with the individual's functioning (National Resource Center on ADHD, 2003; Searight et al., 2000). The diagnostic clinical interview also helps clinicians to identify and rule-out other disorders that may resemble or be comorbid with ADHD. As noted across these assessment guidelines, clinicians should also gather information from significant others in the client's life (e.g., parents, relationship partners, close friends, bosses) to verify information provided by the client and to collect additional information (Murphy & Schachar, 2000; Searight et al., 2000). If possible, it is helpful for the clinician to review relevant records, including those from school, work, and previous mental health evaluation(s) or treatment(s) in order to more fully understand the nature and course of the client's symptoms (American Academy of Child & Adolescent Psychiatry, 2007). Psychological testing, including cognitive, neuropsychological, and achievement tests, may be used in conjunction with the interview to better assess for impairments in attention, concentration, vigilance, short-term memory, and learning abilities (Barkley, 1998). Finally, rating scales comprise a critical component of ADHD assessments (American Academy of Child & Adolescent Psychiatry, 2007; Stefanatos & Baron, 2007). Because these represent the focus of the project, they are reviewed in more detail in the subsequent sections.

Review of Rating Scales

Rating scales are checklists completed by the client or significant other familiar with the functioning of the individual who is the subject of the evaluation. Hinshaw and Nigg (1999) defined ratings as "quantified appraisals of behavioral items or domains, made over relatively lengthy time periods- sometimes as brief as a day, but often periods of several months" (p. 94), and note them to be a valid means of assessing a client's

disposition. Typically, the respondent indicates the degree to which an item applies to him/herself or to the client being assessed. Rating scales are characteristically designed for identifying specific symptoms and behaviors, and for measuring their severity (Rosler et al., 2006; Silverman & Rabian, 1999). They are often classified as either broad or narrow band scales (Collett, Ohan, & Myers, 2003). Broad band scales cover a relatively wide breadth of symptom groups or functional domains; while narrow band scales, such as those used in the assessment of ADHD, are focused on providing information related to a particular problem, diagnosis, or symptom cluster. Overall, rating scales provide quantified information related to target behaviors or symptoms, have standardized instructions and response formats, and follow guidelines for combining individual items into subscale and/or total scores (Hart & Lahey, 1999). In most instances, such information can then be used to determine whether an individual's behavior deviates from that of a normative sample.

Purpose of rating scales. The purpose of rating scales varies depending on goals of the assessment. These may include (a) screening and diagnosis, (b) identifying/quantifying target symptoms and behaviors, (c) identifying/quantifying other symptoms and behaviors that may be comorbid, (d) identifying/quantifying controlling variables, (e) evaluating treatment outcome, and (f) evaluating the role of mediators and moderators (Jensen & Haynes, 1986). Rating scales for ADHD are typically used to assess the presence and degree of core and associated symptoms of the disorder. Their results can clarify the frequency and severity of ADHD symptoms, and help to substantiate the diagnosis (Murphy & Adler, 2004). Results that constitute clinically significant departures from the “norm” can typically be determined based on statistically-

based thresholds (or “cutoff” scores) that are derived from normative data (Silverman & Rabian, 1999). While rating scales long ago became a standard component of assessing ADHD in children (Stefanatos & Baron, 2007), only in the last decade or so have adult ADHD rating scales been developed, researched, and similarly established as a critical component in the assessment of adult ADHD as well.

Advantages of rating scales. Rating scales are invaluable assessment tools for many reasons. Self- and observer-rated scales provide a way to collect client data in a relatively quick, useful, and affordable way on a wide range of behaviors, including those that are rare but important (Rosler et al., 2006). Due to their standardized format and scoring, rating scales allow data to be collected in a systematic, reliable fashion (Kazdin, 2003; Rosler et al., 2006). As referenced above, rating scales are often normed, providing a basis for assessing deviance relative to peers, while also making them sensitive to developmental changes. As dimensional (as opposed to categorical) measures, rating scales’ results capture the “true” continuous nature of most clinical phenomena being assessed (including ADHD symptoms). Additionally, rating scales can be designed to be completed by multiple informants, each of whom may provide unique information or perspective that can add incremental validity to the assessment and provide a more comprehensive picture of a client’s functioning (Hart & Lahey, 1999; Murphy & Schachar, 2000). Finally, rating scales lend themselves to repeated administration and are thus useful for assessing change over time and/or response to treatment (Murphy & Adler, 2004). These various strengths associated with rating scales have contributed to their emergence as valid and widely-utilized tools for assessing adult ADHD (Hinshaw & Nigg, 1999).

Disadvantages of rating scales. Despite these and other strengths, there are some limitations associated with rating scales. For example, the same standardized, structured format that enhances the reliability of rating scales also limits their flexibility (Hart & Lahey, 1999). Although rating scales can cover symptoms or potential problems more efficiently than an interview, they do so with less depth. For example, they do not typically yield information about onset, duration, or contextual factors impacting the expression of symptoms. Rating scales may also be subject to a variety of response biases such as social desirability (i.e., faking good), malingering (i.e., faking bad), halo effects (i.e., subjective bias), leniency-severity bias (i.e., tendency to rate all items as high or low), central tendency bias (i.e., rating everything down the middle), and range restrictions (i.e., using only a portion of the response scale; Hinshaw & Nigg, 1999). Finally, the validity of rating scales may be affected by factors other than the actual presence or severity of the target symptoms. For instance, the content, wording or ordering of items, characteristics of the respondent (e.g., form completed by a significant other who is acutely distressed), or the setting and purpose of the evaluation can all influence the results.

Evaluating rating scales. The criteria for evaluating rating scales are largely based on their normative samples and psychometric properties (most notably reliability and validity; Rosler, Retz, & Stieglitz, 2010; Spiliotopoulou, 2009). The standardization sample should be adequately large and representative of the target population along relevant dimensions such as age, socio-economic status, geography, and ethnicity (Frost, Reeve, Liepa, Stauffer, & Hays, 2007). According to Frost and colleagues (2007), the normative samples should include at least 200 cases, and results should be replicated in at

least one additional sample. User- and/or technical-manuals accompanying rating scales should report information regarding their standardization samples, administration, scoring, and statistical analyses, including those pertaining to their psychometric properties. Reliability and validity should be substantiated through a series of statistical measures using multiple approaches rather than by a single test (Faries, Yalcin, Harder, & Heiligenstein, 2001). Since reliability and validity will comprise a substantial portion of the review of adult ADHD rating scales, they are described further below.

Reliability. Reliability refers to the capability of measuring a target variable (e.g., a symptom or syndrome) in a consistent and dependable way (Frost et al., 2007; Ryan, Lopez, & Sumerall, 2001). There are three indices of reliability most commonly assessed in rating scales: internal consistency, test-retest, and inter-rater.

Internal consistency refers to the degree to which each item of a rating scale measures the same construct (Ryan et al., 2001; Shultz & Whitney, 2005). A scale is internally consistent to the extent that its items are highly correlated; thus, high inter-item correlations suggest that the items are all measuring the same construct (DeVellis, 2003). Cronbach's alpha is the most commonly used statistic to measure internal consistency. Alpha scores can range between 0 and 1, with higher scores reflecting greater internal consistency and the commonly accepted standard being .70 (Faries et al., 2001; Helms, Henze, Sass, & Mifsud, 2006; Spiliotopoulou, 2009; Streiner, 1993).

A measure is said to have test-retest reliability if its results are stable over time (Morgan, Gliner, & Harmon, 2006), as reflected in an individual receiving similar scores across administrations given at two different times (Faries et al., 2001). Pearson's coefficient is the most commonly used measure for assessing the correlation between

scores from different administrations of a given scale (Farries et al., 2001; Frost et al., 2007; Streiner, 1993). Test-retest reliabilities in the .70s are considered acceptable and correlations over .80 are considered to be high (Streiner, 1993).

Finally, inter-rater reliability refers to the degree to which ratings collected from different sources regarding the same client are similar (Streiner, 1993). Thus, two or more individuals independently evaluating the same client should ideally produce similar scores. Methods of measuring inter-rater reliability include percentage of agreement (i.e., proportion of ratings that were the same across raters) and average squared deviation from the modal (i.e., averaging the squared difference between ratings and the mode rating from the entire group; Achenbach, Krukowski, Dumenci, & Ivanova, 2005). Acceptable values for inter-rater reliability are roughly similar to those for test-retest reliability. An inter-rater reliability coefficient below .60 is low and considered to be inadequate. Ideally, inter-rater reliability coefficients should be in the .70s or low .80s (Ryan et al., 2001; Streiner, 1993).

Validity. A test is valid if it does what it is intended to do (Ryan et al., 2001) and allows conclusions to be drawn about people who attain various scores on a scale (Streiner, 1993). Four measures of validity are typically considered when judging whether a rating scale is psychometrically sound: face, content, construct, and criterion.

A measure is said to have face validity when it simply appears or “looks like” it is going to measure what it is supposed to measure (Ryan et al., 2001; Streiner, 1993). In order to achieve the best results, it is best if the respondent can readily see that the scale being filled out relates to his or her presenting problems.

Content validity refers to the degree to which the content of the items on a scale adequately reflect the construct or domain of interest (i.e., ADHD; Shultz & Whitney, 2005). One technique for measuring content validity is to construct a matrix where each column represents a domain important to the scale (Streiner, 1993). If a question reflects a certain domain, a check mark is put under that column and each domain should have at least a few check marks.

Another form of validity is construct validity, which refers to how well a test measures the specific theoretical trait that it is intended to assess (DeVellis, 2003; Frost et al., 2007; Ryan et al., 2001; Trochim & Donnelly, 2008). Construct validity includes both convergent and discriminant validity (Tyron & Berstein, 2003). First, convergent validity indicates a correlation between the scale being used and other scales thought to measure the same construct (e.g., ADHD; Faires et al., 2001; Kazdin, 1995). Pearson's correlation coefficient is often used to reflect the relationship between two measures of similar or related constructs (Ryan et al., 2001). Factor analysis can also be used to assess convergent validity by determining the degree to which separate measures of the same concept possess similar factor structures (DeVon et al., 2007).

Rating scales should be tested in relation to their criterion validity. Criterion validity is a correlation between the rating scale measure and some other criterion or external indicator (Frost et al., 2007; Ryan et al., 2001; Trochim & Donnelly, 2008). For example, a high score on an ADHD rating scale should be highly correlated with a diagnosis of ADHD. There are two types of criterion validity: concurrent and predictive. Concurrent validity is when a test or rating scale correlates well with a measure that has previously been validated, and both measures are administered at roughly the same time

(DeVellis, 2003; Ryan et al., 2001). In this case, the two tests should correlate quite strongly (viz., .80 or above) with one another (Streiner, 1993). Predictive validity refers to the extent to which a score or scale predicts a future score on a reliable criterion measure. Unlike concurrent validity, an interval of time must elapse between the test and the external criterion (Ryan et al., 2001). The correlation here should be high, at least .60 for research purposes and .85 or higher in clinical settings (Streiner, 1993).

Lastly, discriminant validity refers to the ability of a scale to distinguish between different groups. For example, a valid rating scale for ADHD will discriminate between those with and without the disorder. With respect to discriminant validity, the correlation between the two groups should be low, indicating little or no relation (DeVon et al., 2007; Kazdin, 1995). The ability of a scale to distinguish between different groups is measured in various ways, including Correct Classification Rate or Total Classification Accuracy (TCA), Sensitivity, and Specificity (Sparrow, 2010; Taylor, Deb, & Unwin, 2011). TCA measures the percentage of both cases and non-cases correctly classified on the basis of the rating scale score (Sparrow, 2010; Taylor et al., 2011). Sensitivity refers to how well a scale identifies individuals as having the target diagnosis (e.g., ADHD) who do in fact meet criteria for the disorder (i.e., true positives; Khan, Dinnes, & Kleijen, 2001; North Carolina School of Science and Mathematics Statistics Leadership Institute [NCSSM], 1999; Silverman & Rabian, 1999; Sparrow, 2010). Sensitivity is typically expressed as the percentage of “cases” (e.g., adults with ADHD) accurately classified on the basis of their rating scale scores. Specificity refers to how well a scale identifies individuals who do not have the target diagnosis (i.e., true negatives; Greve & Bianchini, 2004; Sparrow, 2010). Specificity is typically expressed as the percentage of “non-cases”

(e.g., adults without ADHD) accurately classified on the basis of their rating scale scores. Ideally, a test should have high sensitivity and specificity (NCSSM, 1999), indicating higher rates of accurate classification; identifying with accuracy the individuals who do and do not have the diagnosis. For sensitivity, specificity, and TCA, values ranging from 70-79% are considered good, 80-89% very good, and 90% or higher excellent (Sparrow, 2010).

Clinical Utility

Polgar, Reg, and Barlow (2005, as cited in Smart, 2006) define clinical utility as, "...the ease and efficiency of use of an assessment, and the relevance and meaningfulness, clinically, of information that it provides" (p. 2). Smart (2006) asserts that "clinical utility is a multi-dimensional judgment about...usefulness, benefits, and drawbacks" (p. 3). Polgar and colleagues identified six core elements to determine clinical utility, including (a) ease of use, (b) time, (c) training and qualifications, (d) format, (e) interpretation, and (f) meaning and relevance of information obtained. Based on the elements described above, some criteria to consider while evaluating rating scales are availability, price, complete and clear instructions, materials needed, time required for both administration and scoring, professional knowledge, training or learning requirements, acceptable formats for both the client and the clinician, the availability of informant (collateral) forms, ease of scoring and interpretation, and meaningfulness of the information gained (Smart, 2006).

Application of Rating Scales to the Assessment of Adult ADHD

Various parent and teacher rating scales for assessing ADHD in children have been used for many years and have been supported by research on their psychometric

properties (Achenbach, 1991a, 1991b, 1991c; Barkley, 1998; Conners, Sitarenios, Parker, & Epstein, 1998a, 1998b; DuPaul, Power et al., 1998). They have become indispensable tools in assessing childhood ADHD and have gained widespread use (Barkley, 1988; Stefanatos & Baron, 2007), becoming the most widely used instruments in assessing externalizing disorders in childhood (Hinshaw & Nigg, 1999). In comparison, the development of rating scales specifically for assessing ADHD in adults is a relatively recent phenomenon. One exception is the Wender Utah Rating Scale (Ward, Wender, & Reimherr, 1993), which was introduced in 1993; however, its utility has been limited by the fact that its items were not keyed to the DSM-IV-TR criteria for ADHD, as well as problems associated with the scale's construction and norms (Spencer et al., 2010). In the mid to late 1990's, efforts began to develop well-constructed scales for assessing adult ADHD with adequate normative samples and items keyed to or inclusive of the DSM-IV symptoms of the disorder. Since that time, there has been a dramatic increase in research and clinical activity pertaining to adult ADHD (Murray & Weiss, 2001), and the development of related rating scales has advanced to the point that such measures have become a standard and expected component of assessing adults for the disorder. Clinicians and researchers interested in the assessment of ADHD in adults now have a variety of choices with respect to rating scales designed for this purpose.

Rationale for the Study

The use of rating scales is now an integral component of assessing ADHD in adults. The quality of these assessments depends in part on the development of well-designed, appropriately normed, and psychometrically sound scales. As a number of

such scales now exist, clinicians who screen and diagnose ADHD in adults would benefit from a single, updated source devoted to describing and reviewing the extant scales.

Existing reviews of ADHD rating scales have some shortcomings, including providing limited information, being too narrow in focus, and/or being outdated. For instance, a recent review chapter by Knouse and Safren (2010) compared only three rating scales. Reviews by Davidson (2008), Murphy and Adler (2004), and Rosler and colleagues (2006) have become somewhat outdated and provided only short descriptions of the covered scales. Taylor, Deb, and Unwin (2011) recently published an article reviewing scales for identifying adults with ADHD. However, that review was not directed specifically toward clinically-oriented scales, as they included numerous scales that are used predominantly for research purposes. Additionally, a major focus of their review was on systematically evaluating the quality of studies pertaining to adult ADHD rating scales, rather than on reviewing each scale in a systematic, narrative fashion. Thus, there has not been a broad-based, clinician-focused review of the available rating scales for adults with ADHD in recent years. Because of the emergence of additional measures (e.g., Barkley, 2011) and relevant data in the interim, along with the lack of thoroughness associated with extant reviews, there was a need for an updated, more complete review of the existing adult ADHD rating scales. Therefore, the aim of this study was to provide a thorough review of the major adult ADHD rating scales currently available for practicing clinicians. The intent was to provide a general description of these scales, their factors and subscales, normative data, psychometric properties, and clinical utility.

Method

This study aimed to identify and examine the current rating scales available for the clinical assessment of adult ADHD. This review provides systematic information on each scale, including (a) a general description including author(s), date of publication, and various forms available for administration; (b) scale development, factors, and scoring; (c) normative data; (d) psychometric properties; and (e) clinical utility. The procedure for identifying the scales and relevant information is discussed below.

Identifying Scales for Review

The scales and associated literature reviewed were identified through searches of the following popular electronic EBSCOhost databases: Academic Search Elite, the Education Resource Information Center (ERIC), Mental Measurements Yearbook with Tests in Print, PsycArticles, PsycINFO, PubMed, and WorldCat. The terms used to search each database included ADHD, adults, rating scales, measures, diagnosis, assessment, and screening. Key articles and chapters found during the literature review were then reviewed to identify existing scales used to assess adult ADHD. Lastly, websites for major publishers of psychological assessment tools were identified and reviewed.

In order to best identify scales that were relevant to the clinical assessment of ADHD in adults, several inclusionary criteria were employed. First, included rating scales are those intended to assess primary symptoms associated with ADHD in adults (18 years or older). Second, the scales reviewed are intended primarily for use by practicing clinicians. Third, they must be available in English (although translations may be available). Finally, the rating scales must be available either in the public domain or

through a commercial publishing company, making them easily accessible to practicing clinicians.

Several exclusionary criteria were also applied. First, rating scales designed exclusively or predominantly for research applications (e.g., clinical trials) were excluded from the study. Second, this review excluded any rating scales that required specialized training. Finally, scales that are not predominantly focused on assessing the symptoms of ADHD were excluded (e.g., quality of life scales, scales focused on the impact of ADHD symptoms, neuropsychological functioning scales, and scales assessing personality traits).

Data Collection for Identified Scales

Once the relevant rating scales that met the inclusionary/exclusionary criteria were identified, information regarding those scales was collected. First, searches of the public domain and World Wide Web via search engines such as Google, Google Scholar, Bing, and WebMD were conducted to gather information. Second, publishers of commercially published rating scales were contacted to request copies of technical manuals and basic forms. In the event the publishing company turned down the request, the lead author of the measure was contacted directly in order to request any published, pre-published, or un-published information regarding the scale. Also, a literature search for descriptive papers regarding these measures, their normative bases, and psychometrics was conducted which included the following databases: Academic Search Elite, EBSCOhost, the Education Resource Information Center (ERIC), Mental Measurements Yearbook with Tests in Print, PsycArticles, PsycINFO, PubMed, and WorldCat. The terms used to search each database included: the name and acronym for

each scale, the author(s) of the scale, review, rating scales, norms/normative data, psychometric properties, reliability, validity, sensitivity, specificity, internal consistency, inter-rater reliability, test-retest reliability, factor analysis, content validity, construct validity, criterion validity, convergent validity, discriminative validity, and clinical utility. Finally, existing reviews of adult ADHD rating scales were examined.

Results

A literature review following the previously described procedures yielded seven rating scales that met the inclusionary criteria for the current study. A number of additional scales were not included in the current review based on the exclusionary criteria. For example, although the ADHD Rating Scale-IV (DuPaul, Power et al., 1998) has been used in screening for adult ADHD (Murphy & Adler, 2004), it was excluded because it was designed to assess ADHD in children and adolescents and is intended to be completed by parents and/or teachers (DuPaul, Anastopoulos et al., 1998; DuPaul, Power et al., 1998). The Adult ADHD Investigator Symptom Rating Scale (AISRS; also known as The Adult ADHD Investigator System Report Scale; Kessler et al., 2006), a clinician-rated version of the Adult ADHD Self-Report Scale (ASRS; Adler, Kessler, & Spencer, 2003), was excluded as it is primarily used in pharmaceutical studies (Adler et al., 2009; Biederman et al., 2006; Biederman et al., 2007a, 2007b; Biederman et al., 2011; Rosler et al., 2006; Spencer et al., 2010; Spencer et al., 2011; Surman et al., 2010). The Current Symptoms Scale (Barkley & Murphy, 1998) was excluded because it has recently been supplanted by the Barkley Adult ADHD Rating Scale-IV (BAARS-IV; Barkley, 2011).

The seven scales reviewed, listed alphabetically, include: (a) the Adult Attention Deficit Disorders Evaluation Scale (A-ADDES; McCarney & Anderson, 1996a, 1996b, 1996c); (b) the Adult ADHD Self-Report Scale v1.1 Symptom Checklist (ASRS-v1.1; Adler et al., 2003); (c) the Attention-Deficit Scales for Adults (ADSA; Triolo & Murphy, 1996); (d) the Barkley Adult ADHD Rating Scale-IV (BAARS-IV; Barkley, 2011); (e) the Brown Attention-Deficit Disorder Rating Scales for Adults (Brown, 1996); (f) the

Conners' Adult ADHD Rating Scales (CAARS; Conners, Erhardt, & Sparrow, 1999); and (g) the Wender Utah Rating Scale (WURS; Ward et al., 1993).

The narrative review for each scale is divided into five sections: (a) general description; (b) scale development, derived factors, and scoring; (c) normative data; (d) psychometric properties; and (e) clinical utility. First, the general description covers information such as the author(s) of the scale, the publisher (where applicable), the date of publication, and the forms available for administration (including the number of items on each form, the response format, the time frame assessed, and administration time). Second, the scale's development and derived factors are presented. This section also includes a short description on how the scale is scored. Third, the normative data is described for the available versions of each scale, including sample size, age ranges, and ethnic composition (when available). Fourth, the psychometric properties of each scale are reviewed. Depending on what has been established for each scale, these properties may include internal consistency, test-retest reliability, and inter-rater reliability, as well as construct validity (including sensitivity and specificity) and criterion validity. Finally, in the fifth section, the clinical utility of each scale is discussed including information on the materials needed, ease of use, availability, and price.

Accompanying the narrative review are two tables. Table 1 (see Appendix C) includes selected descriptive information regarding each scale, such as the scale name, author(s), publisher, forms(s), normative sample, factors, and response format. Table 2 (see Appendix D) summarizes available psychometric information including internal consistency, test-retest reliability, inter-rater reliability, construct and criterion validity, and discriminant validity. Psychometric information in the narrative portion of this

review is reported using evaluative labels (based on guidelines presented in the text), whereas the table includes numeric ranges.

Adult Attention Deficit Disorders Evaluation Scale

General description. The Adult Attention Deficit Disorders Evaluation Scale (A-ADDES), published by Hawthorne Educational Services, was developed in 1996 by McCarney and Anderson. The A-ADDES (McCarney & Anderson, 1996a, 1996b, 1996c) comprises three separate versions (each with its own manual): self-report, home, and work. The home and work versions are both “observer” report forms to be completed by a spouse/significant other, supervisor, coworker, or the like. The self-report version includes 58 items, the home version has 46 items, and the work version has 54 items. All three versions use the same Likert scale response format: (0) do not engage in the behavior, (1) one to several times per month, (2) one to several times per week, (3) one to several times per day, and (4) one to several times per hour. The forms do not specify a time-frame within which respondents are to rate the target individual. Each version can be completed in approximately 15 to 20 minutes.

Scale development, derived factors, and scoring. The items and scales that compose the A-ADDES are based on the DSM-IV definition of the disorder. Each DSM symptom is represented although the wording of the items may not reflect the corresponding DSM symptoms verbatim. The 58 items on the self-report version were rationally- (as opposed to statistically-) derived according to recommendations of psychiatrists and psychologists working with adults with ADHD. Two subscales, reflecting the DSM-IV symptom factors of Inattention and Hyperactivity-Impulsivity,

were initially rationally-derived for all three versions. These factors were later empirically confirmed by factor analysis (McCarney & Anderson, 1996a, 1996b, 1996c).

The raw scores for the two subscales are converted to standard scores and percentiles using gender and age group conversion tables. A total score is determined by adding the two subscale standard scores and converting the sum to a percentile (McCarney & Anderson, 1996a, 1996b, 1996b). The standard scores for the subscales have a mean of 10 and a standard deviation of 3; scores between 7 and 13 are considered to fall within the normal range, scores between 4 and 6 indicate significant difficulties with ADHD symptoms, and scores in the range of 0 to 3 represent extreme difficulties with ADHD symptoms (Kitchens, 2001; Reed, 2001).

Normative data. The self-report version was based on a U.S. normative sample of 2,204 adults representing 45 states and ranging in age from 18 to over 71 years old (McCarney & Anderson, 1996b). The sample consisted of more women than men (69% vs. 31%) and overrepresented persons who are Caucasian, from the northeastern U.S., and college graduates. The home version was normed on 2,003 U.S. adults, aged 18 to 65 years and over. There were less males than females (36% vs. 64%), and an overrepresentation of Caucasians, individuals from the north central United States, and those with college experience or degrees (McCarney & Anderson, 1996a). The work version was normed on 1,867 U.S.-based adults ranging in age from 18 to 65 plus, with 31% being male and 69% female. The latter normative sample overrepresented females, Caucasians, persons from the north central United States, and those with college experience or degrees (McCarney & Anderson, 1996c).

Psychometric properties. The self-report version of the A-ADDES has excellent internal consistency and test-retest reliability (as assessed over a 30 day period; McCarney & Anderson, 1996b).^{3 4} Internal consistency for the home version has also been found to be excellent, with test-retest reliability in the good to excellent range (McCarney & Anderson, 1996a). Inter-rater reliability (as assessed in a sample of 22 spouses, significant others, and parents) was found to be in the poor to good range, with an average inter-rater correlation in the fair range. The work version of the A-ADDES also has excellent internal consistency and test-retest reliability (as assessed over a 30 day period; McCarney & Anderson, 1996c). Inter-rater reliability coefficients for this version of the A-ADDES fell in the good range.

Construct validity, as examined by factor analysis, has been reported for all three versions (McCarney & Anderson, 1996a, 1996b, 1996c). The correlations among subscale raw scores were highly significant. For the self-report version, factor analysis revealed that the Inattention subscale is made up of two main axes representing organization skills and task management (Axis I), and listening skills (Axis II). As would be expected, the two main axes found to make up the Hyperactive-Impulsive subscale are impulsive behavior and hyperactive behavior (Kitchens, 2001).

³ The following guidelines are used throughout this review to evaluate internal consistency reliabilities (Cicchetti & Sparrow, 1990): <.70 “unacceptable”, .70-.79 “fair”, .80-.89 “good”, and >.90 “excellent”. Other reliability and validity data are evaluated as follows (Cicchetti, 1994): <.40 “poor”, .40-.59 “fair”, .60-.74 “good”, and >.75 “excellent”. Of note, such general guidelines, while useful for summarizing data, have limitations given that the thresholds (e.g., for acceptable/unacceptable values) vary across tests and applications. For some psychometric considerations, there is more consensus regarding desirable values. For example, internal consistency is generally expected to be in the .80 or above range for most measures. For test-retest reliability pertaining to traits or characteristics that are assumed to be stable, coefficients in the .80 range are expected over brief intervals, whereas .60 is regarded as acceptable for longer periods (Collett et al. 2003).

⁴ For more specific data, please see Table 2.

Diagnostic (discriminant) validity was examined for the self-report and home versions by using a random sample from the normative group (McCarney & Anderson, 1996a, 1996b). When compared to a corresponding group diagnosed as having ADHD, the mean total subscale scores of the ADHD group were significantly lower (reflecting higher symptom levels) than those of the randomly selected non-ADHD group (Kitchens, 2001; McCarney & Anderson, 1996a, 1996b, 1996c; Reed, 2001). Diagnostic sensitivity, specificity, and total classification accuracy are not reported for the A-ADDES (McCarney & Anderson, 1996a, 1996b, 1996c).

Clinical utility. The self-report, home, and work versions of the A-ADDES are presented in separate manuals. The manuals provide clear instructions for administration and scoring. Although these scales do not specify a time-frame for assessing the behaviors of interest, they are otherwise easy to use for both clients and clinicians. All three versions are available only in paper format; there is no online administration or computerized scoring. The A-ADDES takes relatively little time to administer (viz., 15-20 minutes) and can be used for screening purposes, diagnostic assessment, and for treatment planning (McCarney & Anderson, 1996a, 1996b, 1996c). The A-ADDES is available through Hawthorne Educational Services. The complete kit (including all three versions plus an interventional manual) costs \$226. The separate manuals cost \$21 each, and a collection of 50 rating forms are \$44.

Adult ADHD Self-Report Scale - v1.1 Symptom Checklist

General description. The Adult ADHD Self-Report Scale - v1.1 Symptom Checklist (ASRS) was developed by Adler, Kessler, and Spencer in 2003. The World Health Organization holds the copyright and has made the scale available in the public

domain (<http://www.hcp.med.harvard.edu/ncs/asrs.php>). There is no manual for this scale, but instructions for its clinical use are available on the website. There are two versions of the ASRS: a 6-item screening version (referred to as Part A) and an 18-item version (containing the 6 items from the screening version and an additional 12 items that are referred to as Part B). The 18-item version (Parts A and B) reflects all of the DSM-IV symptoms of ADHD, although their wording has been changed to more accurately reflect the presentation of the disorder in adulthood. The respondent rates him or herself on each question indicating which of the following labels best describes how he or she has felt or behaved over the past six months: (0) never, (1) rarely, (2) sometimes, (3) often, and (4) very often. There are no collateral or other informant-report versions of the ASRS available. The 18-item version of the ASRS takes approximately five minutes to complete whereas the 6-item screener version takes about two minutes.

Scale development, derived factors, and scoring. The ASRS was originally developed as a clinician-administered scale for use in the World Health Organization (WHO) Mental Health Initiative surveys to obtain more accurate estimates of the prevalence of adult ADHD (Kessler, Adler, Ames et al., 2005; Kessler & Ustun, 2004). An advisory group of clinical experts in adult ADHD assembled by the WHO noted that existing adult ADHD scales failed to include all DSM-IV Criterion A symptoms or used questions that were judged to be inadequate. As a result, the decision was made to develop a new self-report measure of adult ADHD (Kessler, Adler, Ames et al., 2005). Two board certified psychiatrists and the advisory group generated questions about the symptoms of ADHD as they are typically expressed among adults with ADHD, and mapped these onto each of the 18 DSM-IV criterion A symptoms. The resulting ASRS

contains the eighteen DSM-IV items (9 inattention and 9 hyperactivity) that are reworded to more accurately reflect the presentation of the disorder in adulthood. In order to develop the ASRS screener, logistic regression analysis was used to identify six items that most accurately predicted ADHD. The screener has four inattention items and two hyperactivity items (Rosler et al., 2006). The response format for all items is a 5-point Likert scale ranging from 0 to 4 (Rosler et al., 2006), corresponding to the nominal labels ranging from “never” to “very often.”

There is no formal information provided on scoring; however, Kessler, Adler, Ames, and colleagues (2005) identified thresholds for each item based on data from the normative sample. For 7 items, a rating of “sometimes” (a score of 2) or higher best differentiated a positive symptom, whereas for the remaining 11 items, a rating of “often” (a score of 3) or higher represented the best cut-off. These thresholds are represented on the ASRS forms with gray boxes. Subsequently, these same authors recommended adding up the total score (of items rated 0-4) rather than counting responses that exceed the aforementioned thresholds (i.e., those in the gray boxes; Kessler et al., 2007). Once the items are summed, a client’s score is regarded as clinically significant if the total score is 14 or higher on the screener and 21 or higher on the full version (Kessler et al., 2007; Knouse & Safren, 2010; Taylor et al., 2011).

Normative data. The normative sample for the ASRS consisted of 154 U.S. adults ranging in age from 18 to over 71 years from the National Comorbidity Survey Replication (NCSR; Kessler, Adler, Ames et al., 2005). The participants were divided into four groups: (1) those who denied any childhood symptoms of ADHD, (2) those who reported at least some childhood symptoms of ADHD but were classified as not meeting

full criteria, (3) those who were classified as meeting criteria in childhood but who denied any current adult symptoms, and (4) those who were classified as meeting criteria in childhood and who reported having some current adult symptoms. Kessler, Adler, Ames, and colleagues (2005) reported that the sample distribution closely matched 2000 census population estimates on a variety of demographic variables, but specific data were not provided.

Psychometric properties. In preliminary reliability and validity studies, the screener version outperformed the full 18-item version in sensitivity, specificity and total classification accuracy (Kessler, Adler, Ames et al., 2005); thus, subsequent reliability and validity studies focused on the screener version of this scale. The internal consistency for the ASRS pilot version (18-item) was good (Adler et al., 2006), and was in the unacceptable to fair range for the screener (Kessler et al., 2007). Subjects re-took the screener one to three months later and test-retest reliability was in the fair to excellent range (Kessler et al., 2007).

The ASRS has been shown to have good concurrent validity (Adler et al., 2006). Adler and his colleagues compared the clinician-administered version of the scale to a pilot version of the ASRS and found excellent intraclass correlation coefficients for total ADHD symptoms. Kessler also found the ASRS' concurrent validity to be in the excellent range when correlated with a clinical interview, the Adult ADHD Clinician Diagnostic Scale (ACDS v1.2; Kessler et al., 2007). Regarding discriminant validity, based on analyses conducted with the normative sample, the screening version of the

ASRS has poor sensitivity⁵, excellent specificity, and excellent total classification accuracy (Kessler, Adler, Ames et al., 2005). In a sample of treatment-seeking adults with substance use problems, sensitivity and specificity were all very good (Luty et al., 2009).

Clinical utility. As there is no manual for the ASRS, instructions on scoring are not as comprehensive as those provided by other scales. In addition to the information provided online, clinicians may want to reference various articles, including those by the scale's authors (Adler et al., 2006; Kessler, Adler, Ames et al., 2005; Kessler et al., 2007; Knouse & Safren, 2010). The ASRS takes little time to administer (viz., 2-5 minutes) and can be used for screening, diagnosis of ADHD, and possibly for evaluating treatment effects, based on its reported use in research studies to track treatment-related changes (Adler et al., 2009; Knouse & Safren, 2010; Surman et al., 2010). Although there is only a self-report version of the ASRS, it is available in numerous languages including Chinese, Danish, Dutch, English, Finnish, French, German, Hebrew, Japanese, Korean, Norwegian, Portuguese, Russian, Spanish, and Swedish. The ASRS is only available online and can be printed in PDF format. It cannot be administered or scored online. This scale can be located online and downloaded for free.

Attention Deficit Scales for Adults

General description. The Attention-Deficit Scales for Adults (ADSA) was developed by Triolo and Murphy and was first published by Brunner/Mazel in 1996. Currently, the ADSA is only available through Psychology Press. The measure includes

⁵ The following guidelines are used throughout this review to evaluate discriminant validity data pertaining to sensitivity, specificity, and total classification accuracy (TCA; Sparrow, 2010): 70-79%, "good", 80-89% "very good", 90% or higher "excellent". Because Sparrow does not provide labels for classification percentages under 70%, the following will be used to supplement those noted above: 60-69% "fair" and <60% "poor".

only a self-report form which contains 54 items. Responses are given on a five-point Likert scale with the following anchors: never, seldom, sometimes, often, or always. The form does not specify a time-frame within which respondents are to rate themselves, and the typical time required to complete the scale is not reported.

Scale development, derived factors, and scoring. In order to develop the ADSA, Triolo interviewed adults with attention-related complaints, considered “how common troubles among children might manifest in adulthood [and developed themes to create potential scale items reflecting] behavioral, cognitive, and emotive dispositions that would be expected of adults with attention related problems” (Triolo & Murphy, 1996, p. v). This resulted in the following nine conceptually-derived factors: (a) attention-focus/concentration, (b) interpersonal, (c) behavior-disorganized activity, (d) coordination, (e) academic theme, (f) emotive, (g) consistency-long-term, (h) childhood, and (i) negative-social (Triolo & Murphy, 1996). As a validity check, the ADSA also includes a response inconsistency measure useful in identifying random or careless responding. It is based on four pairs of items that have similar content where consistent answers would be expected. The authors do not reference efforts to ensure that the DSM criteria items are included in the scale. Whereas some of these criteria for ADHD are represented (e.g., feeling restless, following directions, finishing projects), others are not. To score the ADSA, raw scores for each subscale are calculated, as well as the total raw score. The raw scores are then converted into T-scores and percentile ranks.

Normative data. The normative sample for the ADSA comprised 306 U.S.-based adults (139 females and 167 males), with a mean age of 33.95 (age range unreported). Most of the participants came from the northeastern and southeastern

regions of the U.S. With respect to ethnicity, the manual reports the following breakdown: Caucasian (82%), African-American (14%), Asian (1%), Hispanic (2%), and Native American (less than 1%).

Psychometric properties. Although the ADSA total score demonstrated good internal consistency, Cronbach's alpha coefficients for the nine subscales range from unacceptable to good, suggesting that some interpretive caution is warranted for certain subscales (e.g., academic theme and childhood subscales; Triolo & Murphy, 1996). The ADSA has also been reported to have excellent internal consistency in a sample of outpatient substance abusers (West, Mulsow, & Arredondo, 2003). The current review was unable to identify any test-retest and inter-rater reliability data for the ADSA (Triolo & Murphy, 1996).

West and colleagues (2003) assessed the concurrent and construct validity of the ADSA by comparing the ADSA with a second (unidentified) measure comprised of the 18 DSM-IV symptoms (9 inattention items, 6 hyperactivity items, and 3 impulsivity items). The total ADSA score was significantly correlated with all three DSM-IV categories (hyperactivity, impulsivity, and inattention). With respect to discriminant validity, a step-wise discriminant analysis was conducted utilizing the nine subscales to predict membership into a "normal" (non-ADHD) or "clinical" (ADHD) group (Triolo & Murphy, 1996). The four subscales selected by the step-wise procedure (Consistency/Long-Term, Attention-Focus/Concentration, Behavior-Disorganized Activity, and Negative Social) demonstrated very good sensitivity, excellent specificity, and very good total classification accuracy.

Clinical utility. The ADSA has a manual for scoring and interpretation; however, it is not as comprehensive as most other manuals accompanying ADHD rating scales (e.g., with respect to information provided on the normative sample, time required to administer the scale, and psychometric data). Considering the number of items (54), the ADSA should take relatively little time to administer and, despite some DSM-IV symptoms of ADHD not being represented, can aid in the diagnosis of ADHD. There is no online/computer administration or scoring for the ADSA and no collateral informant forms. The manual and scoring sheets are only available from Psychology Press in the UK (J. Norton, personal communication, October 24, 2011). The manual is approximately \$55 and 10 scoring sheets are around \$52.

Barkley Adult ADHD Rating Scale-IV

General description. The Barkley Adult ADHD Rating Scale (BAARS-IV), published by Guilford Press, was developed by Barkley in 2011. The BAARS-IV is meant to supplant the Current Symptoms Scale (CSS: Barkley & Murphy, 1998; R. Barkley, personal communication, October 3, 2011). There are two self-report versions of the BAARS-IV: one for current symptoms and functioning and a second for recall of childhood symptoms and functioning. The current symptoms self-report version has 30 items and the childhood symptoms self-report version has 20 items. There is also an other-report version for both the current symptoms (30 items) and childhood symptoms (20 items) scales. The BAARS-IV also contains a quick screen for both the self-report and other-report. Both quick screens contain eight questions regarding current symptoms and six questions for childhood symptoms.

On the current symptoms scales (both self- and other-report), 27 of the 30 items are rated on a 4-point Likert scale: (1) never or rarely, (2) sometimes, (3) often, and (4) very often. This same 4-point scale is used for the 18 items on the self- and other-report forms of the childhood symptoms scales that correspond to the DSM-IV symptom criteria for ADHD, and for the screener versions (both self- and other-report). Each current symptoms scale (self-report, other-report, and screener) has three additional questions. The first two ask the informant to identify whether any symptoms were endorsed with a score of three or above (“often” or “very often”), and if so, to specify their age of onset. The third question asks the informant to indicate in which of the following settings those symptoms impair functioning: school, home, work, and social relationships. The childhood symptoms scales (self-report, other-report, and screen) contain two additional questions: whether a score of three or above (“often” or “very often”) was endorsed and, if so, the settings in which those symptoms impaired functioning (school, home, and social relationships).

Informants’ responses to the current symptoms scales (self-report, other-report, and screen) are to be based on the client’s functioning over the past six months. The childhood symptoms scales (self-report, other-report, and screen) are to be answered based upon the client’s functioning between the ages of 5 and 12 years of age. The longer versions of the scales take approximately five to seven minutes to complete, whereas the screener takes about three to five minutes.

Scale development, derived factors, and scoring. The current BAARS-IV evolved from previous scales developed by its author and his colleagues (Murphy & Barkley, 1996a; Murphy & Barkley, 1996b). The item pool for the BAARS-IV consisted

of the 18 DSM-IV symptoms along with a question concerning the estimated onset of symptoms and whether or not they resulted in impairment in several major functional domains. The 18-items from the DSM-IV are slightly modified in language to better fit adult symptoms (e.g., references to school/schoolwork are removed, “play” activities replaced with “fun”). New to the BAARS-IV is the addition of nine items for evaluating the symptoms of sluggish cognitive tempo (SCT; Barkley, 2011). Sluggish cognitive tempo refers to a set of additional symptoms that the scale’s author believes characterizes a subset of adults who are often diagnosed with inattentive type. SCT includes symptoms such as daydreaming, staring, mental foginess, confusion, hypoactivity, sluggishness, slow movement, lethargy, apathy, and sleepiness (Barkley, DuPaul, & McMurray, 1990; Carlson & Mann, 2002; Diamond, 2005; McBurnett, Pfiffner, & Frick, 2001; Milich, Balentine, & Lynam, 2001). SCT symptoms show strong associations with internalizing symptoms, social withdrawal (Garner, Marceaux, Mrug, Patterson, & Hodgens, 2010; Milich et al., 2001; Penny, Waschbusch, Klein, Corkum, & Eskes, 2009), impairments in executive functioning, and poor sustained attention (Wahlstedt & Bohlin, 2010).

The BAARS-IV current symptoms scale yields four empirically-derived factor scores based on the results of a factor analysis conducted on the 27 symptom items (18 DSM-IV + 9 SCT) using 1,249 adults in the normative sample (Barkley, 2011). The analysis of the current symptoms scale yielded four factors: inattention, SCT, hyperactivity, and impulsivity. A factor analysis of the childhood symptoms scale yielded two factors: inattention and hyperactivity-impulsivity. Regarding the development of the quick screen, logistic regression analyses were used to identify the

ADHD symptoms (current and childhood) which best discriminated the ADHD group from the community group.

For scoring, any item answered “often” (3) or “very often” (4) is considered clinically significant (Barkley, 2011). Using the conversion tables provided in the manual, raw scores are converted into percentiles for each of the factors. No standard scores are derived. For the current symptoms scale, the table is divided into five sections: inattention, hyperactive, impulsive, total ADHD (a sum of the inattention, hyperactive, and impulsive scores), and SCT. For childhood symptoms, the table has three sections: inattention, hyperactive-impulsive, and total ADHD (a sum of the inattention and hyperactive-impulsive scores). Generally, scores above the 76th percentile are considered marginally symptomatic, 84th-92nd percentile are borderline or somewhat symptomatic, 93rd-95th percentile are mildly symptomatic, 96th-98th percentile are moderately symptomatic, and scores at or above the 99th percentile are considered markedly or severely symptomatic (Barkley, 2011). Regardless of age, a symptom count of 3 or higher (based on items being endorsed as present “often” or “very often”) on current inattention or current hyperactivity-impulsivity is viewed as clinically significant by virtue of being at or beyond the 93rd percentile of the normative group. A symptom count of 5 or higher for the current ADHD total score is considered clinically significant (93rd percentile). Representing the same threshold levels, the following symptom counts correspond to the 93rd percentile: SCT (4 or higher), childhood inattention or hyperactivity-impulsivity (4 or more on either), and childhood ADHD total (8 or more). With respect to age of onset, experiencing symptoms before 16 years of age is considered clinically significant.

Normative data. Only the self-report versions of the BAARS-IV (current and childhood) are normed (i.e., norms have not been collected for the other-report forms; Barkley, 2011). The self-report versions are based on a U.S. normative sample of 1,249 adults ranging in age from 18 to 70+. The sample comprised 623 males (age range: 18-93 years; mean age: 49.7 years) and 626 females (age range: 18-96 years; mean age: 49.8 years). The sample is roughly proportionate to the 2000 U.S. Census estimates with respect to gender, ethnicity, income, marital status, and employment status (though it slightly under-represents those having less than a high school education, African-Americans, and Hispanics relative to the 2000 census).

Psychometric properties. The following psychometric data are based on the self-report versions of the BAARS-IV for current and childhood functioning (Barkley, 2011). The internal consistency data for the current self-report version ranges from fair to excellent, with internal consistency for the total score falling in the excellent range. The internal consistency of the childhood self-report scale is excellent. Test-retest reliability was assessed with 62 adults, retaking the BAARS-IV after two to three weeks, and ranged from good to excellent for both the current symptoms scale and the childhood symptoms scale. Although inter-rater reliability has not yet been assessed for the BAARS-IV, it was evaluated in an earlier study using a prototype version of the BAARS-IV (P-BAARS; Barkley et al., 2008). The P-BAARS contained the 18 items of ADHD from the DSM-IV and used a similar 4-point Likert response scale (scored 0-3 instead of 1-4); however, the P-BAARS did not contain the SCT symptoms. Based on the P-BAARS, correlations between self- and other-ratings for current ADHD symptoms were good. The inter-rater reliability for the childhood symptoms was fair to excellent. In

addition, Barkley, Knouse, and Murphy (2011) compared the correspondence between self and informant ratings for each ADHD dimension (inattention, hyperactivity-impulsivity, and total impairment scores) on the P-BAARS-IV. The analyses were repeated to include men versus women and then separately for each of the three major informant categories (parents, spouse/partners, and siblings/friends). There was fair to excellent agreement between self and others on current functioning, with slightly lower (but still fair to excellent) levels of agreement between self and parent ratings on childhood functioning.

Regarding convergent validity, Barkley and colleagues (2008) found correlations between the P-BAARS and the Conners' Continuous Performance Test (CPT) scores to be significant (Barkley, 2011). In addition, the ratings of executive functioning deficits on the Barkley Deficits in Executive Functioning Scale (BDEFS) share a significant amount of their variance with the BAARS-IV subscales. Further, the P-BAARS and/or BAARS-IV have been found to correlate significantly with a variety of variables known to be associated with ADHD status including, occupational functioning, educational outcome, marital satisfaction and status, driving outcomes, money management problems, arrest rates, imprisonment, health status, psychopathology, and ratings of impairment (Barkley, 2011). The BAARS-IV manual also reports divergent validity findings (Barkley, 2011). There were very low correlations between self-ratings from the P-BAARS and both academic achievement skills on the Wide Range Achievement Test (WRAT) and IQ scores (Barkley et al., 2008). Regarding criterion validity, the P-BAARS was found to correlate highly with a structured clinical interview (un-named; Barkley, 2011).

No discriminant validity information regarding the BAARS-IV is reported in the manual (Barkley, 2011). However, Barkley and colleagues (2008) found that just one inattention symptom (easily distracted by extraneous stimuli) from the 18 DSM-IV items accurately classified clinical (ADHD) and community control groups (sensitivity percentages for both groups were in the excellent range). Childhood symptoms were also evaluated to determine their ability to discriminate an ADHD group from the community control group. When using six of the 18 symptoms, there was excellent sensitivity and total classification accuracy (Barkley et al., 2008).

Clinical utility. The BAARS-IV manual is comprehensive and provides clear administration and scoring instructions. Currently, there is no online or software-based administration or scoring. The BAARS-IV takes relatively little time to administer (viz., 5-7 minutes) and can be used for screening for ADHD, as part of a comprehensive assessment in diagnosing ADHD, and for assessing treatment effects (Barkley recommends using the ADHD total score; Barkley, 2011). There are multiple versions of the BAARS-IV: current symptoms, childhood symptoms, and a quick screen, each with self- and other-report versions. The manual, which also includes an interview version of the scale, is available through Guilford Press for \$149. Purchase of the manual carries with it permission to photocopy the scales, meaning there is no additional cost for the BAARS-IV forms (Barkley, 2011).

Brown Attention-Deficit Disorder Scales for Adults

General description. The Brown Attention-Deficit Disorder Scales (BADDs) was developed by Brown in 1996 and is published by Pearson PsychCorp. A single

manual addresses both the adolescent and adult versions of the scale.⁶ The BADDS for adults consists of 40 self-report items. Although there is no other-report version, a collateral informant (e.g., parent, significant-other, friend) can offer verbal feedback on the scale. To accommodate such input, there are two rows of scoring for each item: one to record the client's responses and another for any responses from a collateral informant. Despite their potential clinical value (Muniz, 1996), these collateral responses are not formally scored. The respondent indicates how much the listed feeling or behavior has been a problem in the last 6 months on a 4-point Likert scale: (0) never, (1) once a week or less, (2) twice a week, and (3) almost daily. The administration time for the BADDS is approximately 10 to 20 minutes.

Scale development, derived factors, and scoring. Brown noted the main purpose of developing the BADDS was to “tap for a range of symptoms beyond the ‘inattention’ criterion for ADHD in the DSM-IV” (Brown, 1996, p. 1). In addition to the DSM-IV inattention symptoms, the BADDS aims to assess for cognitive and affective impairments associated with ADHD (Brown, 1996). The scale includes the nine DSM-IV “inattention” items (with some slightly rephrased descriptions to better reflect the presentation of the disorder in adulthood), as well as other symptoms identified to be frequently associated with attention-deficit disorders (ADDs), but not included in the DSM criteria (Brown, 1996). The BADDS consists of five conceptually-derived factors or symptom clusters based on Brown's model of ADD (Brown, 1995) rather than the DSM conceptualization of the disorder. The five clusters are: (a) organizing and activating to work, (b) sustaining attention and concentration, (c) sustaining energy and

⁶ Although the Brown ADD Scales comprise both an adolescent (12-18 years old) and adult (>18) scale, only the Brown ADD Scale for Adults is included in the current review.

effort, (d) managing affective interference, and (e) utilizing “working memory” and accessing recall. The BADDs does not contain any factors that assess for hyperactivity and/or impulsivity (Brown, 1996).

For scoring, the examiner sums the raw scores for all five clusters, and adds these scores together to reach a total composite score. The author recommends a raw score of 50 (not a T-score) on the total score as the clinical cut off suggesting a significant possibility that the person will meet diagnostic criteria for ADD (Brown, 1996; Kaufman & Kaufman, 2001). The raw scores for the five clusters and the total score can also be converted to T-scores.

Normative data. The normative data on the BADDs were collected in two phases. The first phase consisted of 100 adults: 50 who had sought evaluation for attentional problems and met DSM-III criteria for ADD and 50 nonclinical adults who were matched for age and socioeconomic level. In phase two, the scale was administered to 123 adults who were seeking consultation for attentional problems, and 93 nonclinical adults matched for age and socioeconomic status (SES). Combined, the adult normative sample included 142 adults in the clinical group and 143 adults in the nonclinical comparison group. Both samples ranged in age from 18-40+, with no upper age limit provided (Brown, 1996). Compared to the 1990 U.S. census data, the ADD sample contained more males (61%), tended to have a higher IQ, and lower SES. The racial/ethnic composition seems reasonably matched to the 1990 census estimates. According to the author, the total symptoms reported by adults in the clinical sample did not differ according to gender, age, SES, IQ, or the presence or absence of hyperactivity (Brown, 1996).

Psychometric properties. The internal consistency for the BADDs is excellent (Brown, 1996), with an overall Cronbach's coefficient alpha in the excellent range for the combined sample. The intercorrelation of the five clusters ranged from unacceptable to good (Brown, 1996; Kooij et al., 2008); however, the correlations from the Brown data were based on the combined clinical and nonclinical samples and therefore may be unduly high (Kaufman & Kaufman, 2001). The correlation(s) of cluster scores with total scores were fair to good (Brown, 1996). Test-retest reliability and inter-rater reliability data were not reported in the manual for the adult scale (Brown, 1996).⁷ However, Kooij and colleagues (2008), as part of a multitrait-multimethod study of the reliability and validity of various adult ADHD rating scales, examined the inter-rater reliability (which was also construed as reflecting convergent validity) of the BADDs. The inter-rater reliability of the BADDs was in the fair to good range, generally indicating low agreement between patient and partner in the measurement of the five clusters of the BADDs (Kooij et al., 2008).

In terms of convergent validity, an adaption of the Banantyne system was used to compare performance of individuals with ADDs (as determined by self-report on the BADDs) on three subtests relevant to ADD impairments (Brown, 1996). Three indices of the Wechsler scales were used: Verbal index (Vocabulary + Comprehension + Similarities), Spatial index (Picture Completion + Block Design + Object Assembly), and Concentration index (Digit Span + Arithmetic + Digit Symbol). Adults with ADD demonstrated some cognitive impairments on subtests of the Wechsler Adult Intelligence

⁷ BADDs for Adolescents was re-administered to nonclinical comparison group (n = 75) two weeks after initial administration, and the test-retest correlation was .87. Adolescent-parent inter-rater reliability coefficient was .84 for the adolescent scale.

Scale (WAIS) that have shown to be correlated with ADDs (Brown, 1996). The adults with ADD showed significant differences among these indices, with the concentration index lower than the other two indices, and differences between spatial and concentration indices. As summarized by Brown (1996), respondents who “self-report clinical levels of ADD impairments on the BADDs tend to demonstrate significant ADD-related cognitive impairments on subtests” (p. 50) of the WAIS.

To assess discriminant validity (Brown, 1996), 142 adults identified as meeting DSM-III criteria for ADD were compared to 143 nonclinical adults matched for age and socioeconomic status. A significant group difference was found as the overall total T-scores for the adults with ADD averaged 47 points higher than for the comparison group. Sensitivity and specificity were excellent when using a cut score of 50 (raw; adjusted for the base rate of ADD in the population).

Clinical utility. The BADDs manual provides clear instructions; however, users interested in only the adult version may encounter difficulties locating pertinent information due to the manual’s combined and alternating coverage of both the adolescent and adult versions. The BADDs takes relatively little time to administer (viz., 10-20 minutes), and can be used for initial screening of ADHD, more thorough assessment, and monitoring outcomes pertaining to ADHD features in the inattention and executive functioning domains. Since the BADDs is based on the inattention and executive functioning domains, the measure is limited with respect to its use as a diagnostic tool for those with combined or predominantly hyperactive-impulsive subtypes. The BADDs can only be administered in paper form, but software scoring is available through the publisher. Although collateral-report information can be collected

on the form, such information is not used in formal scoring, and there are no normative data for such reports. The Brown Complete Kit for Adolescents and Adults is available through Pearson for \$246.95, or \$419.30 with the scoring assistant. The manual alone is \$180.70, a package of 25 self-report/answer forms is \$75, and the scoring software is \$250.

Conners' Adult ADHD Rating Scales

General description. The Conners' Adult ADHD Ratings Scales (CAARS), published by Multi-Health Systems, was developed by Conners, Erhardt, and Sparrow in 1999. The CAARS contains two types of forms: self-report (CAARS-S) and observer-ratings (CAARS-O). Within each of the two types, there are three versions: long, short, and screening. The long versions (CAARS-S:L and CAARS-O:L) have 66 items. The short versions (CAARS-S:S and CAARS-O:S) have 26 items, and are used when administration time is limited (e.g., research settings) or where multiple administrations over time are needed (e.g., treatment monitoring). Finally, the screening versions (CAARS-S:SV and CAARS-O:SV) contain a subset of 30 items that best distinguish individuals with ADHD from non-clinical individuals (Conners et al., 1999).

For the self-report forms, the respondents are asked to rate their own experiences. The observer forms contain the same set of items developed for the self-report forms, although the instructions ask the respondent to rate a specific person. Both the self- and observer-report forms utilize a 4-point Likert-scale format: (0) not at all, never, (1) just a little, once in a while, (2) pretty much, often, and (3) very much, very frequently. Each form asks how much or how frequently each item describes either oneself (self-report forms) or the target person (observer-report forms) "recently." Administration time for

the long forms is approximately 30 minutes, while the short forms and screening versions take about 10 minutes.

Scale development, derived factors, and scoring. To develop the CAARS, the authors created an item pool that tapped a cross-section of symptoms related to adult ADHD based on the DSM-IV symptom criteria for ADHD, the Conners' Rating Scales-Revised for Children and Adolescents, and the current conceptualizations of adult ADHD (Conners et al., 1999). The CAARS does contain items that reflect all of the DSM-IV symptoms; however, the DSM-IV criteria symptoms are not reproduced verbatim as wording was altered in order to better reflect the manifestation of those symptoms in adults. The initial pool of 93 items (later pared down through factor analysis) was related to nine hypothesized, rationally-derived adult ADHD domains: (a) inattention/problems with concentration, (b) hyperactivity/restlessness, (c) impulsivity/problems with self-control, (d) problems with executive functioning, (e) problems with memory, (f) problems with self-concept, (g) interpersonal problems, (h) problems with learning, and (i) problems with mood.

The long forms of the CAARS contain 66 items that combine to yield scores on 9 subscales (Conners et al., 1999). There are four factor analytically-derived scales that assess a cross-section of ADHD-related symptoms and behaviors: inattention/memory (12 items, Scale A), hyperactivity/restlessness (12 items, Scale B), impulsivity/emotional lability (12 items, Scale C), and self-concept (6 items, Scale D). Additionally, there are three DSM-IV ADHD symptom measures that assess ADHD symptoms according to the criteria listed in the DSM-IV. Following the DSM-IV classification scheme, nine items constitute the inattentive subscale (Scale E), nine items constitute the hyperactive-

impulsive subscale (Scale F), and the sum of the two subscales constitutes the DSM-IV Symptom Scale (Scale G). The ADHD Index (12 items) contains the best set of items for distinguishing adults with ADHD from non-clinical adults (Scale H). As a validity check, the CAARS also includes a response inconsistency measure useful in identifying random or careless responding. It is based on eight pairs of items that have similar content where consistent answers would be expected.

The CAARS short forms contain 26 items that combine to yield scores on 6 subscales (Conners et al., 1999). Four abbreviated factor-derived scales are subsets of items from the long form: inattention/memory (5 items), hyperactivity/restlessness (5 items), impulsivity/emotional lability (5 items), and problems with self-concept (5 items). The short forms also contain the ADHD Index and Inconsistency Index.

The screening forms have 30 items and yield scores on the three DSM-IV ADHD symptom measures: inattentive symptoms subscale (9 items), hyperactive-impulsive symptoms subscale (9 items), and a total ADHD Symptoms subscale. The screening forms also contain the ADHD Index.

For all the subscales, including the ADHD Index, raw scores can be converted to T-scores and/or percentiles (Conners et al., 1999). According to the manual, a T-score above 65 represents clinically significant symptoms in a “high base rate” group (e.g., those presenting to a mental health clinic) whereas T-scores of 70 or above can be used to infer clinically significant problems (and a possible ADHD diagnosis) in a “low base rate” group (e.g., adults without identified problems). Score profiles are specific to gender and age group (18-29 years, 30-39 years, 40-49 years, and 50+). Regarding the inconsistency index, for each eight pairs of scores the absolute difference between the

two scores is summed (Conners et al., 1999). A score of eight or greater should be treated as atypical in terms of response consistency and raise questions regarding the validity of the results.

Normative data. The CAARS was normed on a large sample of nonclinical adults from several locations in the U.S. and Canada (Conners et al., 1999).⁸ The normative sample for the CAARS self-report forms (long, short, and screening) consists of 1,026 adults (446 men and 560 women) ranging in age from 18-80 years. The mean age for men was 38.99 years and the mean age for women was 38.84 years. The DSM-IV ADHD Symptom subscales were developed later, and have a smaller normative sample (n = 144, 57 men, 87 women, for ages 18-39 years and n=82, 39 men, 43 women, for 40+ years). The normative sample for observer forms (long, short, and screening) consists of 943 adults (433 men, 510 women) ranging in age from 18-72 years. The mean age of men was 38.04 years and mean age of women was 39.40 years. As noted for the self-report forms, because the DSM-IV ADHD Symptom scale was also developed later in the process, it has a smaller normative sample consisting of 150 adults (77 men, 73 women) for ages 18-39 years, and 69 adults (28 men, 41 women) for those 40 years and over. The authors found significant differences for age and gender which is why the CAARS' T-scores are based on separate gender and age normative data. The manual does not provide information regarding the ethnic composition of the normative samples.

Psychometric properties. Internal consistency for the four scales (Inattention, Hyperactivity, Impulsivity, and Self-Concept) was in the good to excellent range for both

⁸ A separate set of norms for the CAARS were collected on a correctional sample numbering 509 for the self-report version and 220 for the observer-report version. Information regarding this normative sample and the psychometric data emerging from it are not reviewed here, but can be obtained from Conners, Sparrow, and Erhardt (2004).

males and females (Erhardt, Epstein, Conners, Parker, & Sitarenios, 1999). Others have found the internal consistency of both self- and other-ratings on the CAARS to be in the fair to excellent range (Adler et al., 2008; Kooij et al., 2008). Test-retest reliabilities were excellent for both the self-report and other-report versions (Conners et al., 1999; Erhardt et al., 1999).

With respect to inter-rater reliability, correlations between self- and observer-reports were in the fair to good range (Conners et al., 1999; Kooij et al., 2008), and fair to excellent range (Adler et al., 2008). Kooij and colleagues (2008) found the highest agreement was for the clusters pertaining to problems with self-concept and impulsivity/emotional lability, while the lowest level of agreement was for the DSM-IV Inattention Symptoms cluster. In a separate study, correlations between self- and observer-ratings on the cluster indices were poor to good (Van Voorhees, Hardy, & Kollins, 2011).

Regarding construct validity, Erhardt and colleagues (1999) examined the relationship between current levels of ADHD symptoms and childhood symptomology by having subjects complete the Wender Utah Rating Scale (WURS) and the CAARS-S:L. The WURS total score and the CAARS-S:L subscales were significantly correlated. The CAARS manual also cites the generally moderate to high correlations between self-report and observer ratings as suggestive of construct validity (Conners et al., 1999). Convergent validity was verified by Belendiuk, Clarke, Chronis, and Raggi (2007) who found correlations between concurrent self-report and interview data (K-SADS) to be good on both the Inattentive and Hyperactive/Impulsive subscales of the CAARS.

Discriminant validity for the CAARS-S:L was determined using two groups of adults (Erhardt et al., 1999). The first group consisted of 39 adults (23 males, 16 females) who met DSM-IV criteria for adult ADHD according to a modified semi-structured interview. The second (control) group consisted of 40 normal adults randomly selected and matched on the basis of age and gender. The ADHD group scored significantly higher than the non-clinical group on all four of the CAARS factor-analytically derived subscales. Additionally, based on discriminant function analysis of the combined clinical and control samples, sensitivity, specificity, and total classification accuracy (TCA) were all found to be very good. Further, two groups of adults were used to cross-validate the ADHD Index (Conners et al., 1999). Sensitivity, specificity, and TCA of the ADHD Index were good. Van Voorhees and colleagues (2011) researched the sensitivity and specificity between the self- (CAARS-S) and other-rating scales (CAARS-O). For self-ratings, DSM-IV Inattentive Symptoms Index provided the greatest sensitivity and the Impulsivity/Emotional Lability Index provided the least. However, the specificity of the DSM-IV Inattentive Symptoms Index was the lowest among the clusters, and specificity of the Impulsivity/Emotional Lability Index was among the highest. The Conners' ADHD Index was the most effective in detecting both positives and negatives, compared to the other indices. Combining the self and observer-ratings reduced the sensitivity of the scales, but increased specificity. In a separate study involving a sample of treatment-seeking adults with substance use problems, the CAARS' sensitivity was found to be excellent and its specificity was very good (Luty et al., 2009).

Clinical utility. The CAARS manual provides clear instructions for administration, scoring, and profiling the results. The CAARS offers long, short, and screening versions of the scale, each with self- and observer-report forms. Various options are available for administration and scoring, including traditional paper, on-line, and software-based. The software and on-line administration and scoring options produce both profile and interpretive reports. The CAARS takes relatively little time to administer (viz., 10-30 minutes) and can be used for screening, diagnostic assessment, and monitoring the effects of treatment (Adler et al., 2008; Cleland, Magura, Foote, Rosenblum, & Kosanke, 2006; La Malfa, Lassi, Bertelli, & Albertini, 2008). The complete kit is available from the publisher for \$339 and QuikScore forms are \$50 for 25 for each version. The pricing for the online options is as follows: online profile report kit (manual and 3 online profile reports) \$86, online profile reports \$6 (minimum purchase of 50), online interpretive report kit (manual and 3 online interpretive reports) \$92, and online interpretive reports \$8 (minimum purchase of 25).

Wender Utah Rating Scale

General description. The Wender Utah Rating Scale (WURS) was developed in 1993 by Ward, Wender, & Reimherr, and is available online in the public domain (http://www.venturafamilymed.org/Documents/Wender_Utah%20Rating%20Scale.pdf). The WURS retrospectively surveys an array of childhood ADHD symptoms as well as frequently associated behavioral, medical, and learning problems (Stein et al., 1995). The WURS consists of 61-items. There is also a short version that represents a subset of 25 items that are explicitly associated with ADHD (Stein et al., 1995; Ward et al., 1993). On both versions, respondents are asked to rate the frequency with which a particular

symptom or behavior described them as children using the following 5-point Likert scale: (0) not at all or very slightly, (1) mildly, (2) moderately, (3) quite a bit, and (4) very much. The time required to complete the scale is not reported.

Scale development, derived factors, and scoring. The primary purpose of the WURS is to retrospectively assess the presence of childhood ADHD symptoms in adults. The WURS was previously called the Adult Questionnaire of Childhood Characteristics (Stein et al., 1995), and is based on signs and symptoms described in the monograph *Minimal Brain Dysfunction in Children* (Wender, 1971, as cited in Ward et al., 1993). These signs and symptoms are both different from and more detailed than the 18 items in the current DSM-IV criteria (Murphy & Adler, 2004). The WURS draws from the Utah criteria for adult ADHD proposed by Wender as an alternative to the DSM criteria (Rosler et al., 2006; Wender, 1995).

The authors (Ward et al., 1993) first calculated the mean scores for all rationally-derived 61 items of the WURS, but then chose to analyze data from only the 25 items showing the greatest mean difference between the group with ADHD and the other comparison groups (the number of patients in the study was not sufficient to justify a more sophisticated factor analytic or multiple regression examination of the instrument; Ward et al., 1993).

With respect to factor structure of the 61-item version of the WURS, Stein and colleagues (1995) reported a 5-factor solution for both males and females: dysphoria, impulsive/conduct problems, learning problems, attention problems, and poor social skills/awkwardness. Later, McCann, Scheele, Ward, and Roy-Byrne (2000) found a three-factor solution for the WURS 25-item version: oppositional/defiant behavior,

dysthymia, and school/work problems. The underlying factor structure found by McCann and colleagues (2000) suggests that the WURS measures depression and conduct problems, rather than being specific to ADHD.

For scoring, responses for all the items are totaled to reach a raw score. On the 61-item version, an average score for ADHD adults is 62 and an average score for a non-disordered subject is 16 (Wender, 1995). A cutoff score of 46 on the short version was identified as best differentiating adults with and without ADHD (Ward et al., 1993). Taylor and colleagues (2011) reported that there is no cut-off score for the WURS 61-item version due to its weaker psychometric properties compared with the 25-item scale. On the 25-item version, a score greater than 36 indicates significant ADHD symptoms if depression is present, whereas a score of 46 or higher is the appropriate cut-off if depression is absent (Hill, Pella, Singh, Jones, & Gouvier, 2009; Taylor et al., 2011).

Normative data. The initial psychometric data for the WURS were based on three separate normative samples (two clinical and one non-clinical; Ward et al., 1993). The first clinical sample comprised 81 subjects (45 men and 36 women; mean age = 30.7 years) who met the Utah Criteria for ADHD and were waiting to participate in a medication study. In addition, 67 mothers of the above subjects completed the Parents' Rating Scale (a modification of the Conners Abbreviated Rating Scale). A second, "normal" comparison group of 50 men and 50 women (mean age 42.5 years) was also obtained. Finally, as a third comparison group, the authors gave the WURS and Hamilton Rating Scale for Depression to 70 adult outpatients with a diagnosis of unipolar depression (23 men and 47 women; mean age = 39.8 years). No age range, ethnic

background, or other demographic variables were provided for any of the samples (Ward et al., 1993).

Psychometric properties. A number of studies have examined the internal consistency of the WURS. The scale's authors found its internal consistency to be excellent as measured by split-half reliability coefficients (Ward et al., 1993). Stein and colleagues (1995) found internal consistency to fall in the good range for both males and females (with one factor, poor social skills, in the fair range for males and in the unacceptable range for females). Rossini and O'Connor (1995) found both the 61-item and 25-item versions to have good internal consistency. Further studies found the WURS internal consistency to fall in the good to excellent range (Wierzbicki, 2005; McCann et al., 2000). Regarding test-retest reliability, the WURS 61- and 25-item versions ranged from the good to excellent range (Rossini & O'Connor, 1995; Wierzbicki, 2005). No inter-rater reliability data were found for the WURS.

With respect to convergent validity, the correlation coefficients between WURS scores and the Parents' Rating Scale scores were fair (Ward et al., 1993). Further, the WURS was found to significantly correlate with a few (though not all) of the Conners' Continuous Performance Test (CPT) scales and the Personality Assessment Inventory (PAI; Hill et al., 2009). The WURS also moderately but significantly correlated with depressive symptoms measured by the Beck Depression Inventory, Unpleasant Events Schedule, and the Automatic Thoughts Questionnaire (Wierzbicki, 2005), which would be expected given that those with ADHD report more depressive symptoms than non-ADHD counterparts. However, despite the few significant correlations with the CPT, the WURS was not significantly correlated with most of the neuropsychological measures of

attention/concentration, suggesting a lack of convergent validity (Hill et al., 2009). Mackin and Horner (2005) also found that no attentional measures (except for digit symbol) were significantly correlated with the WURS. Some have questioned whether the WURS best measures inattention factors or personality problems (Hill et al., 2009).

Regarding sensitivity and specificity, when the cut-off score for the WURS 25-item is 36 or higher, sensitivity and specificity were excellent (Ward et al., 1993). When the cutoff score is increased to 46 or higher, sensitivity was very good and specificity was excellent. McCann and colleagues (2000) reported good total classification accuracy, but unacceptable sensitivity and specificity. In a sample of treatment-seeking adults with substance use problems (using a cutoff of 36), sensitivity was very good and specificity was good (Luty et al., 2009).

Clinical utility. As there is no manual for the WURS, scoring instructions and interpretation guidelines (including identifying which cut-off scores to use) are not easily accessible. Some information can be found in the book *Attention-Deficit Hyperactivity Disorder in Adults* (Wender, 1995) and the article by Ward et al. (1993). The WURS can be completed in a short amount of time and may be used to retrospectively assess for childhood symptoms of ADHD (Ward et al., 1993). Given that the WURS is a retrospective measure of childhood symptoms and that it is not based on current DSM criteria, it is not appropriate to use for screening or measuring treatment response in adults with ADHD. However, it can be used as part of a comprehensive diagnostic evaluation to determine if ADHD symptoms were present during childhood (which must be established in order to meet DSM-IV criteria for the disorder). The scale is available for no cost online, but there is no online or computer-based administration or scoring.

Although the WURS does not have any collateral forms, it is available in multiple languages including English, Spanish, Italian, and German (Rosler et al., 2006).

Discussion

There has been an increase in research and clinical activity pertaining to adult ADHD and the demand for adult ADHD assessments has increased dramatically (Biederman, 2004; McGough & Barkley, 2004; Murphy & Adler, 2004; Murray & Weiss, 2001). Rating scales are an essential component of evaluating adults for ADHD and the field has progressed to the point where clinicians now have a wide variety of options with respect to these scales. The previous chapter reviewed seven adult ADHD rating scales appropriate for use in clinical practice. Descriptive information was provided on numerous aspects of each scale, including (but not limited to) its normative sample(s), factor structure, scoring, psychometric properties, and clinical utility.

Considerations in Selecting a Scale for Clinical Use

The adult ADHD rating scales reviewed share a number of common features. First, they all require use by trained professionals who have an understanding of psychological testing and psychometrics. Second, all the scales yield quantitative scores that reflect the degree of ADHD symptoms present in the target individual. Third, all of the scales described have face validity with respect to their items appearing to assess the construct of ADHD or impairments known to be associated with the disorder. Although not a formal part of evaluating or validating a measure of ADHD, one implication of such face validity of which clinicians should remain aware is that these scales can be easily faked (Jachimowicz & Geiselman, 2004; Sullivan, May, & Galbally, 2007). Fourth, most of the scales demonstrate adequate content validity; however, there are a few exceptions. Whereas the Brown Scale has content validity for inattentive symptoms of ADHD and for executive functioning (as reflected in Brown's five conceptual clusters), the scale

excludes items related to hyperactivity-impulsivity, and thus lacks content (as well as face) validity for that dimension of ADHD. In addition, because the inclusion of current DSM-IV-TR (APA, 2000) criteria for ADHD (whether verbatim or modified to reflect their manifestation in adults) is an important component of content validity for these scales, it is noteworthy that the BADDs, ADSA, and WURS do not reflect these criteria. None of the reviewed scales can be considered the “gold standard” for assessing ADHD at present. The scales are quite heterogeneous with respect to their strengths and limitations and practitioners must consider multiple factors when determining which might be optimal for a given client or clinical context.

Clinical purpose. There are a number of potential applications for using rating scales including screening, diagnosis, and treatment monitoring. In choosing a screening measure for assessing ADHD, a scale with a short administration time and “good sensitivity to rapidly identify as many true cases as possible” (Collett et al., 2003, p. 1033) is warranted. Whereas all the reviewed scales demonstrate adequate sensitivity, the BAARS-IV (as measured by a precursor to the BAARS-IV), CAARS, and WURS currently have the highest sensitivity ratings when compared to the others.

Regarding diagnosing ADHD, although results from a rating scale should not be the sole basis for determining whether a client suffers from ADHD, they can and should contribute significantly to the process. When using a rating scale for the purpose of facilitating a diagnosis, a clinician should consider the following attributes: (a) adequate norms to help establish that symptoms are present to a deviant degree, (b) representation of each DSM-IV symptom, (c) good psychometric properties, and (d) the opportunity to collect information from collateral sources. Based on the current review, the A-ADDES,

BAARS-IV, and CAARS appear to best meet these parameters whereas the other scales are more limited in their clinical applications. The BADDs, for example, appears to be quite useful, but only in the context where one is primarily interested in assessing symptoms related to inattention and executive functioning. Similarly, because the WURS is a retrospective measure of childhood symptoms, it can be useful in establishing early onset but sheds no light on current ADHD symptoms.

Finally, when repeated ADHD assessments are performed to monitor effects of medication or psychosocial treatment, a clinician would do best with a scale that is short in length, stable (i.e., good test-retest reliability), and sensitive to treatment effects (Collett et al., 2003). Based on these considerations, the ASRS screener, BAARS-IV, and CAARS-short version seem most adequate for use in treatment monitoring.

Symptom representation. All of the reviewed rating scales include some of the DSM-IV-TR (APA, 2000) symptoms; however, not all of them contain all 18 symptoms included in the DSM criteria. For instance, the BADDs excludes hyperactive-impulsive symptoms, the ADSA fails to represent a number of DSM symptoms, and the WURS predates the DSM-IV and is thus not linked to its criteria. All of the DSM criteria are represented in the A-ADDES, ASRS, BAARS-IV, and CAARS. Further, the BAARS-IV and CAARS yield specific factor scores to reflect the endorsement of DSM symptoms. Except for the ASRS, all of the rating scales include items beyond those represented in the DSM to capture aspects of ADHD in adults that might not be reflected in the current criteria. For example, among others, the ADSA includes items addressing interpersonal relationships, feeling clumsy or awkward, cognitive functioning and academic success, and emotional regulation. Besides inattention, hyperactivity, and impulsivity, the

BAARS-IV also assesses sluggish cognitive tempo. The BADDs has additional items addressing organization and getting started on tasks, keeping up energy to complete tasks, emotional regulation, and forgetfulness. The CAARS' items also cover emotional regulation, interpersonal relationships, and self-esteem; and the WURS gathers information relating to conduct problems, learning problems, stress intolerance, and social skills.

Adequacy of normative samples. The A-ADDES, BAARS-IV, and CAARS contain the largest normative sample sizes. Whereas the A-ADDES and CAARS include normative samples for their multiple versions, only the self-report version of the BAARS is normed. The standardization samples for a number of the scales reviewed suffer from some limitations. For instance, the BADDs manual does not provide information on the upper age limit of the sample. The ASRS, CAARS, and WURS do not report the ethnic composition of their sample. The WURS also provides no age range or other demographic variables. A lack of adequate demographic information regarding the normative sample can hamper clinicians' efforts to determine whether it includes individuals similar to a given client (or groups of clients) with whom one tends to work.

Psychometric properties. All of the reviewed scales would benefit from further research to validate or extend upon existing reliability and validity data. At present, the CAARS and WURS are the most widely studied adult ADHD rating scales and have the best psychometric properties (Taylor et al., 2011)⁹. There is considerable variability across the scales with respect to the extent of current data pertaining to their psychometric properties. The A-ADDES would benefit from sensitivity, specificity, total

⁹ This review by Taylor et al. excluded the A-ADDES and predated the release of the BAARS-IV.

classification accuracy, and criterion validity studies. Although the ASRS is a promising rating scale, it lacks adequate reliability and validity data, including test-retest reliability and concurrent validity. The BAARS-IV manual reports substantial reliability and validity data. However, many of the studies were based on a precursor to the current BAARS-IV scale. Although some extrapolation is possible and merited, updated psychometric studies pertaining to inter-rater reliability, convergent, concurrent, and divergent validity, and sensitivity, specificity, and total classification accuracy using the current version (both current and childhood symptoms) of the scale are necessary, along with initial studies pertaining to the internal consistency and test-retest reliability of the other-report version. As for the BADDs, in contrast to the adolescent version of the scale, psychometric data pertaining to the test-retest reliability, construct validity, and criterion validity for the adult version are lacking. Regarding the WURS, the cutoff score recommended for demarcating clinical significance is not empirically-based (Barkley et al., 2008). Lastly, adequate divergent validity data are lacking for all the scales (though some are available for a precursor of the BAARS-IV scale).

Considerations related to clinical utility. In general, the reviewed rating scales are easy to administer and score for trained individuals. It should be noted that some of the scales (viz., A-ADDES and ADSA) do not report a time-frame within which respondents are to rate the target individual. Of course, the existence and quality of user manuals accompanying scales is relevant to their utility. Those scales that lack manuals (viz., the ASRS and WURS) are at a disadvantage with respect to the ease with which users can locate pertinent information, such as instructions on administration/scoring/interpretation, descriptions of the normative sample, and initial psychometric data. It

should be noted that the use of three separate manuals to accompany the three versions of the A-ADDES makes the use of this scale somewhat more cumbersome than those scales that provide a single manual that covers all relevant versions. Clinicians should also be aware that the ADSA manual is not as comprehensive as the others, and that the BADDSS manual can be confusing because it alternates between presenting information on the adolescent and adult versions of the scale. With respect to serving clients whose primary language is other than English, the ASRS, CAARS, and WURS are all available in multiple languages.

A number of the rating scales reviewed include multiple forms (or versions) that vary in length and administration time. The ASRS (full and screener), BAARS-IV (full and quick screen), and CARRS (long, short, and screening) offer multiple forms suited to different clinical purposes (e.g., screening, as part of a comprehensive diagnostic assessment, or repeated assessment for treatment monitoring). The rating scales also vary in the type of scores yielded and how readily interpretable they are. Of note, the ASRS scoring is unclear and is based on raw scores. The BADDSS cutoff score is also based on a raw score (not a T-score), which is not made clear in the manual. It is also notable that most of the scales reviewed lack any sort of response inconsistency check. The ADSA and CAARS are the only forms containing an inconsistency index, useful in identifying random or careless responding.

Collecting information from collateral informants is a commonly recommended component of adult ADHD assessments (Murphy & Schachar, 2000; Searight et al., 2000) and rating scales can be used to facilitate this process. The following scales allow clinicians to gather information from others who have experience with the target

individual: A-ADDES, BAARS-IV, CAARS, and the BADDS. Of note, the A-ADDES and CAARS include separate norms for their collateral- (or observer-) report forms, whereas only the self-report versions of the BAARS-IV and BADDS are normed.

A diagnosis of ADHD in adults requires the clinician to establish that impairing symptoms were present in childhood as well as currently (APA, 2000). The BAARS-IV is the only scale that collects data on both current and childhood symptoms of ADHD. The WURS collects retrospective data on ADHD symptoms in childhood, but does not collect information on current symptoms.

As technological advances increasingly influence clinical practice, the use of conventional paper and pencil administration and scoring of rating scales is likely to decline. Thus, current and future clinicians will increasingly demand on-line or, at a minimum, computerized administration and scoring options for the scales they use. Among the reviewed scales, only the CAARS and the BADDS offer automated options. The BADDS offers a computer scoring program, whereas the CAARS offers both online and software-based administration and scoring. Both scoring programs offer interpretive reports.

The typical practicing clinician is also going to be concerned with costs. The ASRS and WURS forms are both available for free on-line (though, as noted, both lack manuals). For most of the other reviewed sales, the manual and forms must be purchased separately. The exception is the BAARS-IV, where purchase of the manual (for \$149) grants permission to photocopy the rating forms. Otherwise, the cost of the manuals varies (from a low of \$21 for one of the A-ADDES manuals to a high of \$178 for the BADDS scale), as does the cost of forms (where the ADSA is the most expensive at \$520

per 100 forms and the A-ADDES is the least expensive at \$88 per 100 forms). While the automated options noted above for the CAARS and BADDs offer considerable benefits in terms of convenience and time savings for the clinician, they do entail additional cost. Clinicians are charged a lump sum for the BADDs scoring program, whereas the CAARS charges per report, with a minimum purchase required. These myriad factors pertaining to cost combined with the varying needs and preferences of clinicians preclude any general conclusions being drawn with respect to which scales are the most or least cost effective.

Limitations of the Current Review

There are various limitations of the current review. First, while efforts were made to locate all relevant literature, some studies pertaining to aspects of the current review may have been missed. Second, this review summarized published data pertaining to the identified rating scales, but did not consider the methodological quality of the studies producing those data. Third, the review was limited to those scales used primarily in clinical practice and, thus, did not encompass all adult ADHD rating scales (e.g., those used primarily in research settings). Finally, although efforts were made to identify strengths and limitations of the reviewed scales, no systematic evaluation process was used to determine a rank ordering of the overall quality of these scales.

Future Directions

The majority of the data summarized in the current review were reported in the respective scales' manuals based on research conducted by the developers of the scale (the CAARS and WURS appear to have been subjected to more independent non-author affiliated research than the other scales). Although this was expected, it is nonetheless

the case (as noted previously) that all of these scales would benefit from additional research conducted by investigators unaffiliated with their development. This would help to validate currently reported psychometric data, to address areas of relevance to the evaluation of clinical rating scales where data are currently lacking, and to reduce the potential for investigator bias.

There are a number of areas in which research appears to generally be lacking across the scales. First, more data are needed pertaining to scales' sensitivity to treatment-related changes. Second, data on the scales' predictive validity for both short- and long-term outcomes are scarce. Barkley (2011) suggests that such research focus on longitudinal studies documenting how well these scales predict future performance in domains known to be adversely affected by ADHD, such as occupational, educational, financial, and social functioning, health, and criminal activity. Third, there is a need for more data on discriminative validity (with respect to how well the scales differentiate between those with ADHD and other clinical groups, as opposed to the general population). This is a crucial aspect in evaluating and choosing a rating scale for clinical use, and for drawing diagnostic conclusions. Fourth, literature is lacking on these rating scales in relation to client acceptability. Finally, an additional gap in the research pertains to whether the scales perform differentially with respect to their psychometric properties when applied to different ethnic and demographic groups.

As is often the case with established clinical rating scales, many of the adult ADHD scales reviewed here are likely to be revised and refined over time. Certainly, as the DSM-V is set to be released in May 2013 (APA, 2012), current rating scales will need to be modified to reflect changes to the diagnostic criteria. Ideally, efforts to optimize the

nature and phrasing of scale items to better reflect the manifestation of ADHD in the adult population will lead to measures with greater diagnostic sensitivity. In addition, given the current rating scales to assess ADHD in adults are narrow band scales, their expansion to cover other syndromes that can mimic ADHD symptoms or be comorbid with ADHD will help to further aid diagnosis and differential diagnosis. Moreover, the incorporation of scales related to functional impairment and quality of life will help expand the score of these measures in clinically useful ways.

There is also a need for additional, more specified reviews of adult rating scales. Such reviews could be more systematic in their approach, focusing on a limited number of psychometric statistics, so that meta-analyses could be performed. For example, Taylor and colleagues (2011) suggest a meta-analytic review on sensitivity and specificity, as they are good measures of diagnostic accuracy which can be easily compared. Further, it would be beneficial to compare the scales to determine which are most sensitive to treatment changes.

Conclusion

Rating scales are an efficient and effective method for evaluating symptoms of ADHD in adults. They provide a practical way of collecting both self-report and collateral information, and can be used for initial screening, diagnosis, and treatment monitoring. Despite these strengths, rating scales are insufficient for diagnostic assessment and should be used in conjunction with other methods, such as a clinical interview and neuropsychological testing. Given the variety of currently available measures for assessing adult ADHD, it is hoped that the information provided in the current review facilitates the process of selecting a scale for practicing clinicians.

REFERENCES

- Able, S. L., Johnston, J. A., Adler, L. A., & Swindle, R. W. (2007). Functional and psychosocial impairment in adults with undiagnosed ADHD. *Psychological Medicine, 37*, 97-107. doi:10.1017/S0033291706008713
- Achenbach, T. M. (1991a). *Manual for the Child Behavior Checklist/ 4-18 and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T. M. (1991b). *Manual for the Teacher's Report Form and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T. M. (1991c). *Manual for the Youth Self-Report and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T. M., Krukowski, R. A., Dumenci, L., & Ivanova, M. Y. (2005). Assessment of adult psychopathology: Meta-analyses and implications of cross-informant correlations. *Psychological Bulletin, 131*(3), 361-382. doi:10.1037/0033-2909.131.3.361
- Adler, L. A. (2004). Clinical presentations of adult patients with ADHD. *Journal of Clinical Psychiatry, 65*(3), 8-11. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15046529>
- Adler, L., & Cohen, J. (2004). Diagnosis and evaluation of adults with attention deficit/hyperactivity disorder. *Psychiatry Clinics of North America, 27*, 187-201. doi:10.1016/j.psc.2003.12.003
- Adler, L. A., Faraone, S. V., Spencer, T. J., Michelson, D., Reimherr, F. W., Glatt, S. J., . . . Biederman, J. (2008). The reliability and validity of self- and investigator ratings of ADHD in adults. *Journal of Attention Disorders, 11*(6), 711-719. doi:10.1177/1087054707308503

- Adler, L., Kessler, R., & Spencer, T. (2003). *Adult Self Report Scale, ASRS – v1.1 Screener*. World Health Organization, New York.
- Adler, L. A., Spencer, T., Brown, T. E., Holdnack, J., Saylor, K., Schuh, K., . . . Kelsey, D. (2009). Once-daily atomoxetine for adult attention-deficit/hyperactivity disorder: A 6-month, double-blind trial. *Journal of Clinical Psychopharmacology*, 29(1), 44-50. doi:10.1097/JCP.0b013e318192e4a0
- Adler, L. A., Spencer, T., Faraone, S. V., Kessler, R. C., Howes, M. J., Biederman, J., & Secnik, K. (2006). Validity of pilot Adult ADHD Self-Report Scale (ASRS) to rate adult ADHD symptoms. *Annals of Clinical Psychiatry*, 18(3), 145-148. doi: 10.1080/10401230600801077
- American Academy of Child and Adolescent Psychiatry. (2007). Practice parameter for the assessment and treatment of children and adolescents with attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46(7), 894-921. doi:10.1097/chi.0b013e318054e724
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: Text revision* (4th ed.). Washington, DC: Author.
- American Psychiatric Association. (2012). *American Psychiatric Association: DSM-5 development*. Retrieved from <http://www.dsm5.org>
- Applegate, B., Lahey, B. B., Hart, E. L., Biederman, J., Hynd, G. W., Barkley, R.A., . . . Shaffer, D. (1997). Validity of the age-of-onset criterion for ADHD: A report from the DSM-IV field trials. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36(9), 1211-1221. doi:10.1097/00004583-19970900000013

- Babinski, L. M., Hartsough, C. S., & Lambert, N. M. (1999). Childhood conduct problems, hyperactivity-impulsivity, and inattention as predictors of adult criminal activity. *Journal of Child Psychology and Psychiatry*, *40*(3), 347-355. doi:10.1111/1469-7610.00452
- Barkley, R. A. (1988). Child behavior rating scales and checklists. In M. Rutter, A.H. Tuma, & I.S. Lann (Eds.), *Assessment and diagnosis in child psychopathology* (pp. 113-155). New York, NY: Guilford Press.
- Barkley, R. A. (1998). *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment*. New York, NY: Guildford Press.
- Barkley, R. A. (2011). *Barkley Adult ADHD Rating Scale- IV*. New York, NY: Guildford Press.
- Barkley, R. A., Cook, E. H., Dulcan, M., Campbell, S., Prior, M., Atkins, M., . . . Lewandowski, L. (2002). Consensus statement on ADHD. *European Child and Adolescent Psychiatry*, *11*, 96-98. doi:10.1097/00004583-200212000-00001
- Barkley, R. A., & Cox, D. (2007). A review of driving risks and impairments associated with attention-deficit/hyperactivity disorder and the effects of stimulant medication on driving performance. *Journal of Safety Research*, *38*, 113-128. doi:10.1016/j.jsr.2006.09.004
- Barkley, R. A., DuPaul, G. J., & McMurray, M. B. (1990). Comprehensive evaluation of attention deficit disorder with and without hyperactivity as defined by research criteria. *Journal of Consulting and Clinical Psychology*, *58*(6), 775-789. doi:10.1037/0022-006X.58.6.775

- Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K. (2002). The persistence of attention-deficit/hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. *Journal of Abnormal Psychology, 111*(2), 279-289. doi:10.1037//0021-843X.111.2.279
- Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K. (2004). Young adult follow-up of hyperactive children: Antisocial activities and drug use. *Journal of Child Psychology and Psychiatry, 45*(2), 195-211. doi:10.1111/j.1469-7610.2004.00214.x
- Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K. (2006). Young adult outcome of hyperactive children: Adaptive functioning in major life activities. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*(2), 192-202. doi:10.1097/01.chi.0000189134.97436.e2
- Barkley, R. A., Knouse, L. E., & Murphy, K. R. (2011). Correspondence and disparity in the self- and other ratings of current and childhood ADHD symptoms and impairment in adults with ADHD. *Psychological Assessment, 23*(2), 437-446. doi:10.1037/a0022172
- Barkley, R. A., & Murphy, K. R. (1998). *Attention-deficit hyperactivity disorder: A clinical workbook (2nd ed.)*. New York, NY: Guilford Press.
- Barkley, R., Murphy, K. R., & Fischer, M. (2008). *ADHD in adults: What the science says*. New York, NY: Guilford Press.
- Barkley, R. A., Murphy, K., & Kwasnik, D. (1996). Psychological adjustment and adaptive impairments in young adults with ADHD. *Journal of Attention Disorders, 1*(1), 41-54. doi:10.1177/108705479600100104

- Belendiuk, K. A., Clarke, T. L., Chronis, A. M., & Raggi, V. L. (2007). Assessing the concordance of measures used to diagnose adult ADHD. *Journal of Attention Disorders, 10*(3), 276-287. doi:10.1177/1087054706289941
- Biederman, J. (2004). Impact of comorbidity in adults with attention-deficit/hyperactivity disorder. *Journal of Clinical Psychiatry, 65*(Suppl. 3), 3-7. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15046528>
- Biederman, J., Faraone, S.V., Spencer, T., Wilens, T., Norman, D., Lapey, K.A., . . . Doyle, A. (1993). Patterns of psychiatric comorbidity, cognition, and psychosocial functioning in adults with attention deficit hyperactivity disorder. *The American Journal of Psychiatry, 150*(12), 1792-1798. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8238632>
- Biederman, J., Mick, E., Fried, R., Wilner, N., Spencer, T.J., & Faraone, S.V. (2011). Are stimulants effective in the treatment of executive function deficits? Results from a randomized double blind study of OROS-methylphenidate in adults with ADHD. *European Neuropsychopharmacology, 21*, 508-515. doi:10.1016/j.euroneuro.2010.11.005
- Biederman, J., Mick, E., Surman, C., Doyle, R., Hammerness, P., Harpold, T., . . . Spencer, T. (2007a). A randomized, placebo-controlled trial of OROS methylphenidate in adults with attention-deficit/hyperactivity disorder. *Biological Psychiatry, 61*(12), 1402. doi:10.1016/j.biopsych.2007.05.009
- Biederman, J., Mick, E., Surman, C., Doyle, R., Hammerness, P., Michel, E., . . . Spencer, T. (2007b). Comparative acute efficacy and tolerability of OROS and immediate release formulations of methylphenidate in the treatment of adults with

attention-deficit/hyperactivity disorder. *BMC Psychiatry*, 7, 49-46.

doi:10.1186/1471-244X-7-49

Biederman, J., Monuteaux, M. C., Mick, E., Spencer, T., Wilens, T. E., Silva, J. M., . . .

Faraone, S.V. (2006). Young adult outcome of attention deficit hyperactivity disorder: A controlled 10-year follow-up study. *Psychological Medicine*, 36, 167-179. doi:10.1017/S0033291705006410

Brown, T. E. (1995). Differential diagnosis of ADD versus ADHD in adults. In K. G.

Nadeau (Ed.), *A comprehensive guide to attention deficit disorder in adults: Research, diagnosis, and treatment* (pp. 93-108). Philadelphia, PA: Brunner/Mazel.

Brown, T. E. (1996). *Brown Attention-Deficit Disorder Scales for Adolescents and Adults*. San Antonio, TX: The Psychological Corporation.

Carlson, C. L., & Mann, M. (2002). Sluggish cognitive tempo predicts a different pattern of impairment in the attention deficit hyperactivity disorder, predominantly inattentive type. *Journal of Clinical Child and Adolescent Psychology*, 31(1), 123-129. doi:10.1207/S15374424JCCP3101_14

Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, 6(4), 284-290. doi:10.1037/1040-3590.6.4.284

Cicchetti, D. V., & Sparrow, S. S. (1990). Assessment of adaptive behavior in young children. In J. H. Johnson & J. Goldman (Eds.), *Developmental assessment in child clinical psychology: A handbook* (pp. 173-196). Elmsford, NY: Pergamon Press.

- Cleland, C., Magura, S., Foote, J., Rosenblum, A., & Kosanke, N. (2006). Factor structure of the Conners Adult ADHD Rating Scale (CAARS) for substance users. *Addictive Behaviors, 31*(7), 1277-1282. doi:10.1016/j.addbeh.2005.08.014
- Collett, B. R., Ohan, J. L., & Myers, K. M. (2003). Ten-year review of rating scales. V: Scales assessing attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child & Adolescent Psychiatry, 42*(9), 1015-1037.
doi:10.1097/01.CHI.0000070245.24125.B6
- Conners, C. K., Erhardt, D., & Sparrow, E. (1999). *CAARS Adult ADHD Rating Scales: Technical manual*. New York, NY: Multi-Health Systems Inc.
- Conners, C. K., & Jett, J. L. (1999). *Attention deficit hyperactivity disorder (in adults and children): The latest assessment and treatment strategies*. Kansas City, MO: Compact Clinicals.
- Conners, C. K., Sitarenios, G., Parker, J. D. A., & Epstein, J. N. (1998a). The revised Conners' Parent Rating Scale (CPRS-R): Factor structure, reliability, and criterion validity. *Journal of Abnormal Psychology, 26*(4), 257-268.
doi:10.1023/A:1022602400621
- Conners, C. K., Sitarenios, G., Parker, J. D. A., & Epstein, J. N. (1998b). Revision and re-standardization of the Conners Teacher Rating Scale (CTRS-R): Factor structure, reliability, and criterion validity. *Journal of Abnormal Psychology, 26*, 279-291. doi:10.1023/A:1022606501530
- Conners, C. K., Sparrow, E., & Erhardt, D. (2004). *Conners Adult ADHD Rating Scales: Correctional Settings*. New York, NY: Multi-Health Systems Inc.

- Davidson, M. A. (2008). Literature review: ADHD in adults: A review of the literature. *Journal of Attention Disorders, 11*(6), 628-641. doi: 10.1177/1087054707310878
- De Quiros, G. B., & Kinsbourne, M. (2001). Adult ADHD: Analysis of self-ratings on a behavior questionnaire. In J. Wasserstein, L. E. Wolf, & F. F. LeFever (Eds.), *Adult attention deficit disorder: Brain mechanisms and life outcomes* (pp. 140-147). New York, NY: New York Academy of Sciences.
- DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage.
- DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D.M., Hayden, S.J., Lazzara, D. J., . . . Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship, 39*(2), 155-164. doi:10.1111/j.1547-5069.2007.00161.x
- Diamond, A. (2005). Attention-deficit disorder (attention-deficit/hyperactivity disorder without hyperactivity): A neurobiologically and behaviorally distinct disorder from attention/deficit/hyperactivity disorder (with hyperactivity). *Developmental Psychology, 17*(3), 807-825. doi:10.1017/S0954579405050388
- DuPaul, G. J., Anastopoulos, A. D., Power, T. J., Reid, R., Ikeda, M. J., & McGooney, K. E. (1998). Parent ratings of attention-deficit/hyperactivity disorder symptoms: Factor structure and normative data. *Journal of Psychopathology and Behavioral Assessment, 20*, 83-102. doi:10.1023/A:1023087410712
- DuPaul, G. J., Power, T. J., Anastopoulos, A. D., & Reid, R. (1998). *ADHD rating scale-IV: Checklists, norms, and clinical interpretation*. New York, NY: Guilford Press.

- Epstein, J. N., Conners, C. K., Sitarenios, G., & Erhardt, D. (1998). Continuous performance test results of adults with attention deficit hyperactivity disorder. *The Clinical Neuropsychologist, 12*(2), 155-168. doi:10.1076/clin.12.2.155.2000
- Erhardt, D., Epstein, J. N., Conners, C. K., Parker, J. D. A., & Sitarenios, G. (1999). Self-ratings of ADHD symptoms in adults II: Reliability, validity, and diagnostic sensitivity. *Journal of Attention Disorders, 3*(3), 153-158.
doi:10.1177/108705479900300304
- Faraone, S. V., & Biederman, J. (2005). What is the prevalence of adult ADHD: Results of a population screen of 966 adults. *Journal of Attention Disorders, 9*(2), 384-391. doi:10.1177/1087054705281478
- Faraone, S. V., Biederman, J., Feighner, J. A., & Monuteaux, M. C. (2000). Assessing symptoms of attention deficit hyperactivity disorder in children and adults: Which is more valid? *Journal of Consulting and Clinical Psychology, 68*(5), 830-842.
doi:10.1037//0022-006X.68.5.830
- 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 subthreshold diagnoses valid? *American Journal of Psychiatry, 163*(10), 1720-1729. doi:10.1176/appi.ajp.163.10.1720
- Faries, D. E., Yalcin, I., Harder, D., & Heiligenstein, J. H. (2001). Validation of the ADHD rating scale as a clinician administered and scored instrument. *Journal of Attention Disorders, 5*(2), 107-115. doi:10.1177/108705470100500204

- Fischer, M., & Barkley, R.A. (2006). Young adult outcomes of children with hyperactivity: Leisure, financial, and social activities. *International Journal of Disability*, 53(2), 229-245. doi:10.1080/10349120600716182
- Fischer, M., Barkley, R. A., Edelbrock, C. S., & Smallish, L. (1990). The adolescent outcomes of hyperactive children diagnosed by research criteria: Academic, attentional, and neuropsychological status. *Journal of Consulting and Clinical Psychology*, 58(5), 580-588. doi:10.1037/0022-006X.58.5.580
- Fischer, M., Barkley, R. A., Smallish, L., & Fletcher, K. (2002). Young adult follow-up of hyperactive children: Self-reported psychiatric disorders, comorbidity, and the role of childhood conduct problems and teen CD. *Journal of Abnormal Child Psychology*, 30(5), 463-475. doi:10.1023/A:1019864813776
- Flory, K., Molina, B. S. G., Pelham, W. E., Gnagy, E., & Smith, B. (2006). Childhood ADHD predicts risky sexual behavior in young adulthood. *Journal of Clinical Child and Adolescent Psychiatry*, 35(4), 571-577.
doi:10.1207/s15374424jccp3504_8
- Fried, R., Petty, C. R., Surman, C. B., Reimer, B., Aleardi, M., Martin, J. M., . . . Biederman, J. (2006). Characterizing impaired driving in adults with attention-deficit/hyperactivity disorder: A controlled study. *Journal of Clinical Psychiatry*, 67(4), 567-574. doi:10.4088/JCP.v67n0407
- Frost, M. H., Reeve, B. B., Liepa, A. M., Stauffer, J. W., & Hays, R. D. (2007). What is sufficient evidence for the reliability and validity of patient-reported outcome measures? *International Society for Pharmacoeconomics and Outcomes Research*, 10 (Suppl. 2), S94-S105. doi:10.1111/j.1524-4733.2007.00272.x

- Garner, A. A., Marceaux, J. C., Mrug, S., Patterson, C., & Hodgens, B. (2010). Dimensions and correlates of attention deficit/hyperactivity disorder and sluggish cognitive tempo. *Journal of Abnormal Child Psychology*, 38(8), 1097-1107. doi:10.1007/s10802-010-9436-8
- Goldman, L. S., Genel, M., Bezman, R. J., & Slanetz, P. J. (1998). Diagnosis and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Journal of the American Medical Association*, 279(14), 1100-1107. doi:10.1001/jama.279.14.1100
- Goldstein, S., & Ellison, A. T. (2002). *Clinicians' guide to adult ADHD: Assessment and intervention*. San Diego, CA: Academic Press.
- Greve, K. W., & Bianchini, K. J. (2004). Setting empirical cut-offs on psychometric indicators of negative response bias: A methodological commentary with recommendations. *Archives of Clinical Neuropsychology*, 19, 533-541. doi:10.1016/j.acn.2003.08.002
- Gudjonsson, G. H., Sigurdsson, J. F., Gudmundsdottir, H. B., Sigurjonsdottir, S., & Smari, J. (2010). The relationship between ADHD symptoms in college students and core components of maladaptive personality. *Personality and Individual Differences*, 48, 601-606. doi:10.1016/j.paid.2009.12.015
- Hallowell, E., & Ratey, J. (1994). *Driven to Distraction*. New York, NY: Pantheon.
- Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Child Psychology and Psychiatry*, 45(2), 260-273. doi:10.1111/j.1469-7610.2004.00218.x

- Hart, E. L., & Lahey, B. B. (1999). General child behavior rating scales. In D. Shaffer, C. P. Lucas, & J. E. Richters (Eds.), *Diagnostic assessment in child and adolescent psychiatry* (pp. 65-87). New York, NY: The Guildford Press.
- Hart, E. L., Lahey, B. B., Loeber, R., Applegate, B., Green, S. M., & Frick, P. J. (1995). Developmental changes in attention-deficit hyperactivity disorder in boys: A four-year longitudinal study. *Journal of Abnormal Child Psychology*, *23*(6), 729-749. doi:10.1007/BF01447474
- Helms, J. E., Henze, K. T., Sass, T. L., & Mifsud, V. A. (2006). Treating Cronbach's alpha reliability coefficients as data in counseling research. *The Counseling Psychologist*, *34*(5), 630-660. doi:10.1177/0011000006288308
- Hill, B. D., Pella, R. D., Singh, A. N., Jones, G. N., & Gouvier, W. D. (2009). The Wender Utah Rating Scale: Adult ADHD diagnostic tool or personality index? *Journal of Attention Disorders*, *13*(1), 87-94. doi:10.1177/1087054708320384
- Hinshaw, S. P., & Nigg, J. T. (1999). Behavior rating scales in the assessment of disruptive behavior problems in childhood. In D. Shaffer, C. P. Lucas, & J. E. Richters (Eds.), *Diagnostic assessment in child and adolescent psychiatry* (pp. 91-126). New York, NY: The Guildford Press.
- Jachimowicz, G., & Geiselman, R. E. (2004). Comparison of ease of falsification of attention deficit hyperactivity disorder diagnosis using standard behavioral rating scales. *Cognitive Science Online*, *2*, 6-20. Retrieved from <http://cogsci-online.ucsd.edu>

- Jensen, B. J., & Haynes, S. N. (1986). Self-report questionnaires and inventories. In A. R. Ciminero, K. S. Calhoun, & H. E. Adams (Eds.), *Handbook of behavioral assessment* (pp. 150-175). New York, NY: Wiley.
- Kalbag, A. S., & Levin, F. R. (2005). Adult ADHD and substance abuse: Diagnostic and treatment issues. *Substance Use & Misuse, 40*, 1955-1981.
doi:10.1080/10826080500294858
- Kaufman, N. L., & Kaufman, A. S. (2001). [Review of the test Brown Attention-Deficit Disorder Scales]. In *The fourteenth mental measurements yearbook*. Available from <http://www.unl.edu/buros/>
- Kazdin, A. E. (1995). Preparing and evaluating research reports. *Psychological Assessment, 7*(3), 228-237. doi:10.1037/1040-3590.7.3.228
- Kazdin, A. E. (2003). *Methodological issues and strategies in clinical research*. Washington, DC: American Psychological Association.
- Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., . . . Walters, E. (2005). The World Health Organization adult ADHD self-report scale (ASRS): A short screening scale for use in the general population. *Psychological Medicine, 35*, 245-256. doi:10.1017/S0033291704002892
- Kessler, R. C., Adler, L. A., Barkley, R., Biederman, J., Conners, C. K., Demler, O., . . . Zaslavsky, A. M. (2006). The prevalence and correlates of adult ADHD in the United States: Results from the national comorbidity survey replication. *American Journal of Psychiatry, 163*(4), 716-723. doi:10.1176/appi.ajp.163.4.716
- Kessler, R. C., Adler, L. A., Barkley, R., Biederman, J., Conners, C. K., Faraone, S. V., . . . Zaslavsky, A.M. (2005). Patterns and predictors of attention

deficit/hyperactivity disorder persistence into adulthood: Results from the national comorbidity survey replication. *Society of Biological Psychiatry*, 57, 1442-1451.

doi:10.1016/j.biopsych.2005.04.001

Kessler, R. C., Adler, L. A., Gruber, M. J., Sarawate, C. A., Spencer, T., & Van Brunt, D.

L. (2007). Validity of the World Health Organization Adult ADHD Self-Report Scale (ASRS) Screener in a representative sample of health plan members.

International Journal of Methods in Psychiatric Research, 16(2), 52-65.

doi:10/1002/mpr.208

Kessler, R. C., & Ustun, T. B. (2004). The World Mental Health (WMH) Survey

Initiative Version of the World Health Organization (WHO) Composite

International Diagnostic Interview (CDI). *International Journal of Methods in*

Psychiatric Research, 13(2), 93-121. doi:10.1002/mpr.168

Khan, K. S., Dinnes, J., & Kleijnen, J. (2001). Systematic reviews to evaluate diagnostic

tests. *European Journal of Obstetrics and Gynecology and Reproductive Biology*,

95, 6-11. doi:10.1016/S0301-2115(00)00463-2

Kitchens, H. (2001). [Review of the test Adult Attention Deficit Disorders Evaluation

Scale]. In *The fourteenth mental measurements yearbook*. Available from

<http://www.unl.edu/buros/>

Klein, R. G., & Mannuzza, S. (1991). Long-term outcome of hyperactive children: A

review. *Journal of the American Academy of Child & Adolescent Psychiatry*,

30(3), 383-387. doi:10.1097/00004583-199105000-00005

- Knouse, L. E., Bagwell, C. L., Barkley, R. A., & Murphy, K. R. (2005). Accuracy of self-evaluation in adults with ADHD: Evidence from a driving study. *Journal of Attention Disorders, 8*(4), 221-234. doi:10.1177/1087054705280159
- Knouse, L. E., & Safren, S. A. (2010). Adult attention-deficit hyperactivity disorder. In L. Baer & M. Blais (Eds.), *Handbook of clinical rating scales and assessment in psychiatry and mental health* (pp. 195-208). Totowa, NJ: Humana Press.
- Kollins, S. H., McClernon, J., & Fuemmeler, B. F. (2005). Association between smoking and attention-deficit/hyperactivity disorder symptoms in a population-based sample of young adults. *Archives of General Psychiatry, 62*, 1142-1147. doi:10.1001/archpsyc.62.10.1142
- Kooij, J. J. S., Boonstra, A. M., Swinkels, S. H. N., Bekker, E. M., Noord, I. d., & Buitelaar, J. K. (2008). Reliability, validity, and utility of instruments for self-report and informant report concerning symptoms of ADHD in adult patients. *Journal of Attention Disorders, 11*(4), 445-458. doi:10.1177/1087054707299367
- Kooij, J. J. S., Buitelaar, J. K., vandenOord, E. J., Furer, J. W., Rijnders, C. A., & Hodiament, P. P. G. (2005). Internal and external validity of attention-deficit hyperactivity disorder in a population-based sample of adults. *Psychological Medicine, 35*, 817-827. doi:10.1017/S003329170400337X
- Lahey, B. B., Applegate, B., McBurnett, K., Biederman, J., Greenhill, L., Hynd, G. W., . . . Shaffer, D. (1994). DSM-IV field trials for attention deficit hyperactivity disorder in children and adolescents. *American Journal of Psychiatry, 151*(11), 1673-1685. Retrieved from <http://ajp.psychiatryonline.org/cgi/content/abstract/151/11/1673>

- La Malfa, G., Lassi, S., Bertelli, M., Pallanti, S., & Albertini, G. (2008). Detecting attention-deficit/hyperactivity disorder (ADHD) in adults with intellectual disability: The use of Conners' Adult ADHD Rating Scales (CAARS). *Research in Developmental Disabilities, 29*, 158-164. doi:10.1016/j.ridd.2007.02.002
- Lambert, N. M., & Hartsough, C. S. (1998). Prospective study of tobacco smoking and substance dependencies among samples of ADHD and non-ADHD participants. *Journal of Learning Disabilities, 31*(6), 533-544.
doi:10.1177/002221949803100603
- Lewandowski, L. J., Lovett, B. J., Coddling, R. S., & Gordon, M. (2008). Symptoms of ADHD and academic concerns in college students with and without ADHD diagnoses. *Journal of Attention Disorders, 12*(2), 156-161.
doi:10.1177/1087054707310882
- Luty, J., Rajagopal Arokiadass, S. M., Sarkhel, A., Easow, J. M., Desai, R., Moorti, O. P., & el Hindy, N. (2009). Validation of self-report instruments to assess attention deficit hyperactivity disorder symptoms in adults attending community drug and alcohol services. *Journal of Addiction Medicine, 3*, 151-154.
doi:10.1097/ADM.0b013e31819343d0
- Mackin, R. S., & Horner, M. D. (2005). Relationship of the Wender Utah Rating Scale to objective measures of attention. *Comprehensive Psychiatry, 46*(6), 468-471.
doi:10.1016/j.comppsy.2005.03.004
- Mannuzza, S., & Klein, R. G. (2000). Long-term prognosis in attention-deficit/hyperactivity disorder. *Child and Adolescent Psychiatric Clinics of North*

America, 9(3), 711-726. Retrieved from <http://psycnet.apa.org/psycinfo/2000-00431-014>

Mannuzza, S., Klein, R. G., Bessler, A., Malloy, P., & LaPadula, M. (1993). Adult outcome of hyperactive boys: Educational achievement, occupational rank, and psychiatric status. *Archives of General Psychiatry*, 50(7), 565-576. Retrieved from <http://archpsyc.ama-assn.org/cgi/content/abstract/50/7/565>

Mannuzza, S., Klein, R.G., Bessler, A., Malloy, P., & LaPadula, M. (1998). Adult psychiatric status of hyperactive boys grown up. *The American Journal of Psychiatry*, 155(4), 493-498. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/9545994>

Mannuzza, S., Klein, R. G., & Moulton, J. L. (2003). Persistence of attention-deficit/hyperactivity disorder into adulthood: What have we learned from the prospective follow-up studies? *Journal of Attention Disorders*, 7(2), 93-100. doi:10.1177/108705470300700203

Marks, D. J., Newcorn, J. H., & Hallperin, J. M. (2001). Comorbidity in adults with attention-deficit/hyperactivity disorder. In J. Wasserstein, L.E. Wolf, & F.F. LaFever (Eds.), *Adult attention deficit disorder: Brain mechanisms and life outcomes* (pp. 216-238). New York, NY: New York Academy of Sciences.

McBurnett, K., Pfiffner, L. J., & Frick, P. J. (2001). Symptom properties as a function of ADHD type: An argument for continued study of sluggish cognitive tempo. *Journal of Abnormal Child Psychology*, 29(3), 207-213. doi:10.1023/A:1010377530749

- McCann, B. S., Scheele, L., Ward, N., & Roy-Byrne, P. (2000). Discriminant validity of the Wender Utah Rating Scale for attention-deficit/hyperactivity disorder in adults. *The Journal of Neuropsychiatry and Clinical Neurosciences*, *12*, 240-245. doi:10.1176/appi.neuropsych.12.2.240
- McCarney, S. B., & Anderson, P. D. (1996a). *Adult Attention Deficit Disorders Evaluation Scale: Home version technical manual*. Columbia, MO: Hawthorne Educational Services, Inc.
- McCarney, S. B., & Anderson, P. D. (1996b). *Adult Attention Deficit Disorders Evaluation Scale: Self-report version technical manual*. Columbia, MO: Hawthorne Educational Services, Inc.
- McCarney, S. B., & Anderson, P. D. (1996c). *Adult Attention Deficit Disorders Evaluation Scale: Work version technical manual*. Columbia, MO: Hawthorne Educational Services, Inc.
- McGough, J. J. & Barkley, R. A. (2004). Diagnostic controversies in adult attention deficit hyperactivity disorder. *American Journal of Psychiatry*, *161*(11), 1948-1956. doi:10.1176/appi.ajp.161.11.1948
- 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*(4), 463-488. doi:10.1093/clipsy.8.4.463
- 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*(3), 159-166. doi:10.1177/108705479700200302

- Montano, B. (2004). Diagnosis and treatment of ADHD in adults in primary care. *Journal of Clinical Psychiatry, 65*(3), 18-21. Retrieved from <http://psycnet.apa.org/psycinfo/2004-12838-003>
- Morgan, G. A., Gliner, J. A., & Harmon, R. J. (2006). *Understanding and evaluating research in applied and clinical settings*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Muniz, L. (1996). Test review: Brown Attention-Deficit Disorder Scales and Brown ADD Diagnostic Forms. *Diagnostique, 22*(1), 63-76. Retrieved from Education Resources Information Center (ERIC).
- Murphy, K. R., & Adler, L. A. (2004). Assessing attention-deficit/hyperactivity disorder in adults: Focus on rating scales. *Journal of Clinical Psychiatry, 65*(3), 8-11. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15046530>
- Murphy, K., & Barkley, R. A. (1996a). Attention deficit hyperactivity disorder adults: Comorbidities and adaptive impairments. *Comprehensive Psychiatry, 37*(6), 393-401. doi:10.1016/S0010-440X(96)90022-X
- Murphy, K., & Barkley, R. A. (1996b). Prevalence of DSM-IV symptoms of ADHD in adult licensed drivers: Implications for clinical diagnosis. *Journal of Attention Disorders, 1*(3), 147-161. doi:10.1177/108705479600100303
- Murphy, K. R., Barkley, R. A., & Bush, T. (2002). Young adults with attention deficit hyperactivity disorder: Subtype differences in comorbidity, educational and clinical history. *Journal of Nervous and Mental Disease, 190*(3), 147-157. doi:10.1097/00005053-200203000-00003

- Murphy, K. R., & LeVert, S. (1995). *Out of the fog: Treatment options and coping strategies for adult attention deficit disorder*. New York, NY: Hyperion.
- Murphy, P., & Schachar, R. (2000). Use of self-ratings in the assessment of symptoms of attention deficit hyperactivity disorder in adults. *American Journal of Psychiatry*, *157*, 1156-1159. doi:10.1176/appi.ajp.157.7.1156
- Murray, C., & Weiss, M. (2001). Assessment of adult ADHD: Current guidelines and issues. *Anuario de Psicologia*, *32*(4), 23-33. Retrieved from <http://www.raco.cat/index.php/anuariopsicologia/article/viewFile/61689/88456>
- National Institutes of Mental Health. (1998). *Can adults have ADHD?* Retrieved from <http://www.nimh.nih.gov/health/publications/attention-deficit-hyperactivity-disorder/can-adults-have-adhd.shtml>
- National Resource Center on ADHD. (2003). *Diagnosis of AD/HD in Adults (WWWK9)*. Retrieved from <http://www.help4adhd.org/en/treatment/guides/WWK9>
- North Carolina School of Science and Mathematics Statistics Leadership Institute. (1999). *Categorical Data Analysis*. Retrieved from http://www.ncssm.edu/courses/math/Stat_Inst/Stats2007/Stat%20and%20Calc/Sensitivity%20and%20Specificity.pdf
- Penny, A. M., Waschbusch, D. A., Klein, R. M., Corkum, P., & Eskes, G. (2009). Developing a measure of sluggish cognitive tempo for children: Content validity, factor structure, and reliability. *Psychological Assessment*, *21*(3), 380-389. doi:10.1037/a0016600

- Reed, J. C. (2001). [Review of the test Adult Attention Deficit Disorders Evaluation Scale]. In *The fourteenth mental measurements yearbook*. Available from <http://www.unl.edu/buros/>
- Rosler, M., Retz, W., & Stieglitz. (2010). Psychopathological rating scales as efficacy parameters in adult ADHD treatment investigations: Benchmarking instruments for international multicenter trials. *Pharmacopsychiatry*, *43*(3), 92-98.
doi:10.1055/s-0029-1242819
- Rosler, M., Retz, W., Thome, J., Schneider, M., Stieglitz, R. D., & Falkai, P. (2006). Psychopathological rating scales for diagnostic use in adults with attention-deficit/hyperactivity disorder (ADHD). *European Archives of Psychiatry and Clinical Neuroscience*, *256*(Suppl. 1), 1/3-1/11. doi:10.1007/s00406-006-1001-7
- Rossini, E. D., & O'Connor, M. A. (1995). Retrospective self-reported symptoms of attention-deficit hyperactivity disorder: Reliability of the Wender Utah Rating Scale. *Psychological Reports*, *77*(3), 751-754. doi:10.2466/pr0.1995.77.3.751
- Roy-Byrne, P., Scheele, L., Brinkley, J., Ward, N., Wiatrak, C., Russo, J., . . . Varley, C. (1997). Adult attention-deficit hyperactivity disorder: Assessment guidelines based on clinical presentation to a specialty clinic. *Comprehensive Psychiatry*, *38*(3), 133-140. doi:10.1016/S0010-440X(97)90065-1
- Ryan, J. J., Lopez, S. J., & Sumerall, S. W. (2001). Understanding test construction. In W. I. Dorfman & M. Hersen (Eds.), *Understanding psychological assessment* (pp. 1-15). Dordrecht, Netherlands: Kluwer Academic.

- Searight, H. R., Burke, J. M., & Rottnek, F. (2000). *Adult ADHD: Evaluation and treatment in Family Medicine*. Retrieved from <http://www.aafp.org/afp/20001101/2077.html>
- Shekim, W. O., Asarnow, R. F., Hess, E., Zaucha, 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.
doi:10.1016/0010-440X(90)90026-O
- Shultz, K. S., & Whitney, D. J. (2005). *Measurement theory in action: Case studies and exercises*. Thousand Oaks, CA: Sage.
- Silverman, W. K., & Rabian, B. (1999). In D. Shaffer, C. P. Lucas, & J. E. Richters (Eds.), *Diagnostic assessment in child and adolescent psychiatry* (pp. 127-166). New York, NY: The Guildford Press.
- Simon, V., Czobor, P., Balint, S., Meszaros, A., & Bitter, I. (2009). Prevalence and correlates of adult attention-deficit hyperactivity disorder: Meta-analysis. *The British Journal of Psychiatry*, *194*, 204-211. doi:10.1192/bjp.bp.107.048827
- Smart, A. (2006). A multi-dimensional model of clinical utility. *International Journal for Quality in Health Care*, 1-6. doi:10.1093/intqhc/mzl034
- Sparrow, E. P. (2010). *Essentials of Conners behavior assessments*. Hoboken, NJ: John Wiley & Sons.
- Spencer, T. (2004). ADHD treatment across the life cycle. *Journal of Clinical Psychiatry*, *65*(3), 22-26. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15046532>
- Spencer, T. J., Adler, L. A., Qiao, M., Saylor, K. E., Brown, T. E., Holdnack, J. A., . . . Kelsey, D. K. (2010). Validation of the Adult ADHD Investigator Symptom

Rating Scale (AISRS). *Journal of Attention Disorders*, 14(1), 57-68.

doi:10.1177/1087054709347435

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. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/9384867>

Spencer, T. J., Mick, E., Surman, C. B. H., Hammerness, P., Doyle, R., Alvardi, M., . . . Biederman, J. (2011). A randomized, single-blind, substitution study of OROS methylphenidate (concerta) in ADHD adults receiving immediate release methylphenidate. *Journal of Attention Disorders*, 15(4), 286-294.

doi:10.1177/1087054710367880

Spiliotopoulou, G. (2009). Reliability reconsidered: Cronbach's alpha and pediatric assessment in occupational therapy. *Australian Occupational Therapy Journal*, 56, 150-155. doi:10.1111/j.1440-1630.2009.00785.x

Stefanatos, G. A., & Baron, I. S. (2007). Attention-Deficit/Hyperactivity Disorder: A neuropsychological perspective towards DSM-V. *Neuropsychology Review*, 17, 5-38. doi:10.1007/s11065-007-9020-3

Stein, M. A., Sandoval, R., Szumowski, E., Roizen, N., Reinecke, M. A., Blondis, T. A., . . . Klein, Z. (1995). Psychometric characteristics of the Wender Utah Rating Scale (WURS): Reliability and factor structure for men and women.

Psychopharmacology Bulletin, 31(2), 425-433. Retrieved from PsycINFO.

Streiner, D. L. (1993). A checklist for evaluating the usefulness of rating scales.

Canadian Journal of Psychiatry, 38(2), 140-148. Retrieved from

<http://psycnet.apa.org/psycinfo/1993-39755-001>

- Sullivan, B. K., May, K., & Galbally, L. (2007). Symptom exaggeration by college adults in attention-deficit hyperactivity disorder and learning disorder assessments. *Applied Neuropsychology, 14*(3), 189-207. doi:10.1080/09084280701509083
- Surman, C., Hammerness, P., Petty, C., Doyle, R., Chu, N., Gebhard, N., . . . Biederman, J. (2010). Atomoxetine in the treatment of adults with subthreshold and/or late onset attention-deficit hyperactivity disorder- not otherwise specified (ADHD-NOS): A prospective open-label 6-week study. *CNS Neuroscience & Therapeutics, 16*(1), 6-12. doi:10.1111/j.1755-5949.2009.00124.x
- Taylor, A., Deb, S., & Unwin, G. (2011). Scales for the identification of adults with attention deficit hyperactivity disorder (ADHD): A systematic review. *Research in Developmental Disabilities, 32*, 924-938. doi:10.1016/j.ridd.2010.12.036
- Tercyak, K. P., Peshkin, B. N., Walker, L. R., & Stein, M. A. (2002). Cigarette smoking among youth with attention-deficit/hyperactivity disorder: Clinical phenomenology, comorbidity, and genetics. *Journal of Clinical Psychology in Medical Settings, 9*(1), 36-50. doi:10.1023/A:1014183912859
- Torgersen, T., Gjervan, B., & Rasmussen, K. (2006). ADHD in adults: A study of clinical characteristics, impairment and comorbidity. *Nordic Journal of Psychiatry, 60*(1), 38-43. doi:10.1080/08039480500520665
- Triolo, S. J., & Murphy, K. R. (1996). *Attention Deficit Scales for Adults (ADSA)*. Bristol, PA: Brunner/Mazel.
- Trochim, W. M. K., & Donnelly, J. P. (2008). *Research methods knowledge base* (3rd ed.). Mason, OH: Atomic Dog.

- Tyron, W. W., & Bernstein, D. (2003). Understanding measurement. In J. C. Thomas, & M. Hersen (Eds.), *Understanding research in clinical and counseling psychology* (pp. 27-68). Mahwah, NJ: Lawrence Erlbaum Associates.
- Van Voorhees, E. E., Hardy, K. K., & Kollins, S. H. (2011). Reliability and validity of self- and other-ratings of symptoms of ADHD in adults. *Journal of Attention Disorders, 15*(3), 224-234. doi:10.1177/1087054709356163
- Wahlstedt, C., & Bohlin, G. (2010). DSM-IV defined inattention and sluggish cognitive tempo: Independent and interactive relations to neuropsychological factors and comorbidity. *Child Neuropsychology, 16*(4), 350-365.
doi:10.1080/09297041003671176
- Wallis, C. (1994, July 18). Life in overdrive. *Time*, 42-50.
- 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. *The American Journal of Psychiatry, 150*(6), 885-890. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/21827477>
- Weiss, G., & Hechtman, L. (1993). *Hyperactive children grown up: ADHD in children, adolescents, and adults* (2nd ed.). New York, NY: Guilford Press.
- Weiss, M. D., & Weiss, J. R. (2004). A guide to treatment of adults with ADHD. *Journal of Clinical Psychiatry, 65*, 27-37. Retrieved from http://www.coloradohealthpartnerships.com/provider/clin_gd/dx_based/ADHD_for_Adults.pdf
- Wender, P. H. (1995). *Attention-deficit hyperactivity disorder in adults*. New York, NY: Oxford University Press.

- Wender, P. H. (2000). *ADHD: Attention-deficit hyperactivity disorder in children, adolescents, and adults*. New York, NY: Oxford University Press.
- West, S. L., Mulsow, M., & Arredondo, R. (2003). Factor analysis of the Attention Deficit Scales for Adults (ADSA) with a clinical sample of outpatient substance abusers. *The American Journal on Addictions, 12*(2), 159-165.
doi:10.1111/j.1521-0391.2003.tb00614.x
- Whalen, C. K., Jamner, L. D., Henker, B., Delfino, R. J., & Lozano, J. M. (2002). The ADHD spectrum and everyday life: Experience sampling of adolescent moods, activities, smoking, and drinking. *Child Development, 73*(1), 209-227.
doi:10.1111/1467-8624.00401
- Wierzbicki, M. (2005). Reliability and validity of the Wender Utah Rating Scale for college students. *Psychological Reports, 96*(3), 833-839. Retrieved from Academic Search Complete.
- Wolf, L. E., & Wasserstein, J. (2001). Adult ADHD: Concluding thoughts. In J. Wasserstein, L. E. Wolf, & F. F. LeFever (Eds.), *Adult attention deficit disorder: Brain mechanisms and life outcomes* (pp. 396-408). New York, NY: New York Academy of Sciences.
- Zucker, M., Morris, M. K., Ingram, S. M., Morris, R. D., & Bakeman, R. (2002). Concordance of self- and informant ratings of adults' current and childhood attention-deficit/hyperactivity disorder symptoms. *Psychological Assessment, 14*(4), 379-389. doi:10.1037//1040-3590.14.4.379

APPENDIX A

Review of the Literature

Section A- Empirical Literature

Author	Title/Year	Sample	Measures	Key Findings
Able, S. L., Johnston, J. A., Adler, L. A., & Swindle, R. W.	Functional and psychosocial impairment in adults with undiagnosed ADHD. (2007).	n= 752 “undiagnosed” ADHD subjects n= 199 “non-ADHD” controls n= 198 diagnosed ADHD subjects	Medical Outcomes Study Short Form (SF-36); Patient Health Questionnaire (PHQ-2), Sheehan Disability Scale; Moos Dyadic Assessment; Finch Criticality Scale; Adult ADHD Quality-of-Life Scale (AAQOL); basic information on demographics, socio-economic characteristics, current health, past medical and family history, and selected behaviors shown to be associated with ADHD (e.g., tobacco, alcohol use, accidents, legal difficulties, etc.)	-“Undiagnosed” ADHD subjects higher rates of comorbidity and greater functional impairment than “non-ADHD” controls -Also higher rates of depression, problem drinking, lower educational attainment, and greater emotional and interpersonal difficulties in “undiagnosed” subjects -“Undiagnosed” subjects had a different racial composition and lower educational attainment than “diagnosed” ADHD subjects
Achenbach, T. M., Krukowski, R. A., Dumenci, L., & Ivanova, M. Y.	Assessment of adult psychopathology: Meta-analyses and implications of cross-informant correlations. (2005).	51,000 articles published over 10 years in 52 peer-reviewed journals for correlations between self-reports and informants’ reports	Meta-analysis reviewed 51,000 articles published between 07/01/1993 and 06/20/2003 to estimate the correlations between self- and informants’	-108 (0.2%) had qualifying correlations -Mean cross-informant correlations were .681 for substance use, .428 for internalizing, and .428 for externalizing problems

			ratings of adult psychopathology	<ul style="list-style-type: none"> -When different instruments were used, the mean cross-informant correlation was .304 -Supports need for systematically obtaining multi-informant data -Article reviewed aspects of reliability and validity
Adler et al.	The reliability and validity of self- and investigator ratings of ADHD in adults. (2008).	<p>N = 536 adults n = 266 placebo n = 270 atomoxetine 66.4% combined type, 31.2% inattentive type, 2.4% hyperactive-impulsive type</p>	<p>CAARS screening version; Structured Clinical Interview for DSM-IV (SCID); Sheehan Disability Scale; Clinical Global Impression; Hamilton Depression Rating Scale; Hamilton Anxiety Rating Scale</p>	<ul style="list-style-type: none"> -CAARS screening version (30 items) -Internal consistency .74 - .95 -Inter-rater reliability .45 - .87 -At baseline, investigator ratings were better predictors of treatment outcome than self-report -Both ratings are highly variable at baseline
Adler et al.	Once-daily atomoxetine for adult attention-deficit/hyperactivity disorder: A 6 month, double blind trial. (2009).	<p>n = 94 (37.6%) randomized to atomoxetine n = 112 (44.6%) randomized to placebo Ages 18-54 years (mean age 37.6 years) 50% men 87.9% White</p>	<p>Adult ADHD Clinician Diagnostic Scale version 1.2; Clinical Global Impressions; AISRS Symptom Checklist; CAARS-Inv:SV; ASRS v1.1; Adult ADHD Quality of Life Scale</p>	<ul style="list-style-type: none"> -Atomoxetine statistically better than placebo in all but 1 post-baseline -Study extended finding to include 6 months from 10-week -AISRS used in pharmaceutical research study -AISRS is a clinician-

				administered scale
Adler et al.	Validity of pilot adult ADHD self-report scale (ASRS) to rate adult ADHD symptoms. (2006).	N = 60 adult ADHD patients (NYU 35, Mass General 25) Mean age 37.5 years 68% male	Self-administered ADHD Rating Scale (ADHD RS) and Adult ADHD Self-Report Scale (pilot ASRS- rater administered)	-ADHD RS requires administration by trained clinician so goal is to have easy self-report scale for primary care setting -Adult Self-Report Scale symptom checklist (pilot ASRS) patient-administered version of clinician-administered ADHD RS -Internal consistency high for both (Cronbach's alpha ADHD RS .88 and ASRS .89) -Intra-class correlation between scales .84 -Percent of agreement ranged between 43-72% -ASRS high concurrent validity with rater-administered ADHD RS -Pilot adult ASRS reliable and valid
Applegate et al.	Validity of the age-of-onset criterion for ADHD: A report from the DSM-IV field trials (1997).	N = 380 Ages 4-17 years 79% male, 21% female 64.6% non-Hispanic White, 15.6% African-	Version 2.3 of the Diagnostic Interview Schedule for Children (DISC); Children's Global Assessment	-18% who met criteria for combined type and 43% who met criteria for predominantly inattentive type did not manifest

		American, 16.6% Hispanic, 0.5% Asian- American, 2% other	Scale; scale adapted from the Homework Problem Checklist and the Academic Performance Rating Scale	impairment before age 7 years -Requiring impairment before age 7 may interfere with accurate diagnosis -Questions validity of DSM-IV age of onset criteria
Babinski, L. M., Hartsough, C. S., & Lambert, N. M.	Childhood conduct problems, hyperactivity- impulsivity, and inattention as predictors of adult criminal activity. (1999).	n = 230 males n = 75 females Followed prospectively since childhood (average age 9 years) to young adulthood (average age 26 years)	Children's Attention and Adjustment Survey (CAAS); What's Happening Questionnaire; official arrest records	-Both hyperactivity- impulsivity and conduct problems, alone and together, predict greater likelihood of having an arrest record for males
Barkley, R. A.	Barkley Adult ADHD Rating Scale- IV (BAARS-IV). (2011).	N = 1,249 Ages 18-70+ 623 males (mean age 49.7 years) 626 females (mean age 49.8 years) Sample similar to 2000 US Census estimates Majority of participants were Caucasian	BAARS-IV	-Guildford Press -6 versions -Current symptoms self- report (30 items) -Childhood symptoms self-report (20 items) -Current symptoms other- report (30 items) -Childhood symptoms other-report (20 items) -Quick screen current symptoms self-report (8 items) -Quick screen childhood symptoms other-report (6

				<p>items)</p> <ul style="list-style-type: none"> -4 factors (current symptoms): inattention, sluggish cognitive tempo, hyperactivity, and impulsivity -2 factors (childhood symptoms): inattention and hyperactivity-impulsivity All forms: (1) never or rarely, (2) sometimes, (3) often, and (4) very often -Based on DSM-IV symptoms -Internal consistency .78-.95 -Test-retest .66-.88 -Many reliability/validity data from other studies (Barkley et al., 2008; Barkley et al., 2011) -Manual very comprehensive -Could have included criterion validity using CAARS ADHD Index -Once manual is purchased, permission to photocopy rating scales for clinical use
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<p>Barkley, R. A., DuPaul, G. J., & McMurray, M. B.</p>	<p>Comprehensive evaluation of attention deficit disorder with and without hyperactivity as defined by research criteria. (1990).</p>	<p>n = 48 ADHD children with hyperactivity (39 boys, 3 girls) n = 42 ADHD children without hyperactivity (43 boys, 5 girls) n = 19 learning disabled group (12 boys, 4 girls) n= 34 community control group (35 boys, 1 girl)</p>	<p>Parent interview; Vineland Adaptive Behavior Scale; Child Behavior Checklist; Home Situations Questionnaire; Revised Conners Parent Rating Scale; Beck Depression Inventory; SCL-90-R, Lock-Wallace Marital Adjustment Test; Life Stress Scale from the Parent Stress Index; Child Behavior Checklist-Teacher Form; School Situations Questionnaire; ADHD Rating Scale; Taxonomy of Problem Situations; ACTeRS scale Iowa; Conners Teacher Rating Scale; Teacher Self-Control Rating Scale; WISC-Revised; WRAT-R; CPT; Kagan Matching Familiar Figures Test; behavioral observations</p>	<p>-Both ADHD groups at greater risk of behavioral, social, and emotional problems than LD and control groups -ADHD with hyperactivity associated with less self-control, more impulsivity/aggression, and more internalizing and externalizing problems -ADHD+ hyperactivity were more off task, had more substance abuse, and aggression -ADHD without hyperactivity day-dreamed, were more lethargic, were more impaired in perceptual-motor speed, and had more anxiety disorders -ADHD with hyperactivity and ADHD without hyperactivity may be two separate disorders rather than subtypes</p>
<p>Barkley, R. A., Fischer,</p>	<p>The persistence of</p>	<p>n = 147 hyperactive</p>	<p>Structured interview of</p>	<p>-Occurrence of ADHD</p>

<p>M., Smallish, L., & Fletcher, K.</p>	<p>attention-deficit/hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. (2002).</p>	<p>n = 71 community controls Ages 19-25 years 91% male, 9% female 94% Caucasian, 5% African American, 1% Hispanic</p>	<p>disruptive behavior disorders and parent interview from DSM-III-R and DSM-IV; Conners Parent Rating Scale- Revised; Home Situations Questionnaire; Werry-Weiss-Peters Activity Rating Scale; high school transcripts; employer ratings of job performance; criminal records; Young Adult Self-Report from the Child Behavior Checklist (YASR)</p>	<p>was higher using parent reports -Relying on self-reports may underestimate persistence of ADHD into adulthood -Use of additional sources and collaborative others is recommended</p>
<p>Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K.</p>	<p>Young adult follow-up of hyperactive children: Antisocial activities and drug use. (2004).</p>	<p>n = 147 hyperactive n = 73 controls Mean age 20-21 years 13-year follow-up</p>	<p>WAIS-III vocabulary and block design subtests; structured interview of antisocial behavior; structured interview on current illicit drug use at adulthood; parent interview of ADHD symptoms; official arrest records</p>	<p>-Hyperactive group committed variety of antisocial acts and have been arrested more compared to controls -Hyperactive group higher frequency of property theft, disorderly conduct, assault with fists, carrying a concealed weapon, illegal drug possession, and more arrests -Childhood, adolescent,</p>

				and adult ADHD predicted higher drug-related activities -Those with CD engage in greater and more diverse substance use
Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K.	Young adult outcome of hyperactive children: Adaptive functioning in major life activities. (2006).	n = 149 hyperactive children n = 76 community controls Ages 19-25 years 91% male, 9% female 94% Caucasian, 5% African American, 1% Hispanic	Clinical interview; high school transcripts; employer ratings of job performance; parent reports; intelligence estimates (WAIS-R vocabulary and block design); Young Adult Behavior Checklist (YABCL); Hyperactivity Index of Conners Parent Rating Scale (CPRS); Werry-Weiss Perers Activity Rating Scales (WWPARS)	-Noted impairment in adaptive functioning including education (e.g., failure to graduate, grade retentions), occupational, social, financial, and sexual functioning
Barkley, R. A., Knouse, L. E., & Murphy, K. R.	Correspondence and disparity in the self- and other ratings of current and childhood ADHD symptoms and impairments in adults with ADHD. (2011).	n = 146 ADHD diagnosed, 68% male n = 97 clinical controls self-referred for ADHD but not diagnosed, 56% male n = 109 community controls, 47% male 94% Caucasian, 2-5%	Adult ADHD Symptoms Scale; Structured Clinical Interview for ADHD; Shipley Institute of Living Scale; Symptom Checklist 90-Revised	-Adult ADHD Symptoms Scale is precursor version of BAARS-IV -Agreement between and self- and other-ratings on current functioning .59-.80 -Agreement between self and other-ratings on

		Hispanic-Latino, 1-2% African American, 1% Asian, <1% Native American		childhood functioning .53-.75 -Clinic referrals not diagnosed with ADHD, especially women, had higher disparity rates -Age, IQ, and education not significantly associated with disparities in ratings -Anxiety was associated with greater disparity rates
Barkley, R. A., Murphy, K. R., & Fischer, M.	ADHD in adults: What the science says. (2008).	n = 146 diagnosed ADHD (mean age 32.4 years) n = 97 clinic-referred non-ADHD control group (mean age 37.8 years) n = 109 non-referred community control group (mean age 36.4 years) (UMASS study) n = 158 hyperactive group (diagnosed as hyperactive in childhood; 83.6% males with hyperactivity,	Shipley Institute of Living Scale; Structured Clinical Interview for ADHD; Current Symptoms Scale; Childhood Symptoms Scale; Vocabulary & Block Design (WAIS- III); Peabody Picture Vocabulary Test; Conners Parent and Teacher Rating Scales; Home Situations Questionnaire; Werry- Weiss-Peters Activity Rating Scale	- Book focused on the prevalence, impairment, and comorbidities of persisting ADHD -Provides data from two major studies- the UMASS and Milwaukee studies -Includes discussions on prevalence and criteria for ADHD in adults, impairment in major life activities (educational, occupational, social, health, lifestyle, money management, driving), comorbid psychiatric disorders, and drug

		87.5% without) n = 81 matched community control group (93.3% males) (Milwaukee study)		use/antisocial behavior -Evidence that ADHD persists into adulthood and can contribute to significant impairments and comorbidities
Barkley, R. A., Murphy, K., & Kwasnik, D.	Psychological adjustment and adaptive impairments in young adults with ADHD. (1996).	n = 25 adults with ADHD (mean age 22.5 years; 36% female, 64% male) n = 23 controls (mean age 22 years; 39% female, 61% male) Mean educational level 13.8 years	Structured Clinical Interview for DSM-III- R (SCID); structured demographic and adaptive functioning interview; Symptom Checklist 90- Revised (SCL-90R); Conners Continuous Performance Test; creativity measures; FAS from Controlled Oral Word Association Test; a question from the Aphasia Screening Test; Digit-Span from WAIS- R; Simon color memory sequencing game, time estimation and time production tasks	-Those with ADHD reported more symptoms of ADHD and oppositional defiant disorder in their jobs -ADHD young adults had committed more antisocial acts and had been arrested more often when compared to controls -ADHD had shorter durations of employment -Those with ADHD had greater psychological distress and committed more antisocial acts, like thefts, disorderly conduct, and arrests -On testing, ADHD group worse on response inhibition, sustained attention, and verbal and nonverbal working memory

<p>Belendiuk, K. A., Clarke, T. L., Chronis, A. M., & Raggi, V. L.</p>	<p>Assessing the concordance of measures used to diagnose adult ADHD. (2007).</p>	<p>N = 69 mothers of children with ADHD Mean age 38.40 years</p>	<p>Semistructured interview (SCID); K-SADS; Wender-Utah Rating Scale (WURS); Conners' Adult ADHD Rating Scale (CAARS long version)</p>	<p>-Current self-reports and current collateral reports on K-SADS $r = .54$ (inattentive symptoms) and $r = .29$ (hyperactive/impulsive symptoms) -Past self-reports and collateral reports on K-SADS $r = .57$ (inattentive) and $r = .43$ (HA) -Current self-report and interview of the CAARS and K-SADS $r = .74$ (inattentive) and $r = .61$ (HA) -WURS and K-SADS $r = .81$ (inattentive) and $.51$ (HA) -For current symptoms, no significant difference in the number of symptoms reported on the CAARS and K-SADS -For past symptoms, no significant difference between self-reports on WURS and K-SADS</p>
<p>Biederman et al.</p>	<p>Gender differences in a sample of adults with</p>	<p>N = 128 adults 61% male, 39% female</p>	<p>Childhood-onset ADHD confirmed by structured</p>	<p>-Males and females with ADHD were similar to</p>

	attention deficit hyperactivity disorder. (1994).		interview; SCID from DSM-III-R; modules from Kiddie-SADS-E; Clinical interview using DSM-III-R criteria; WRAT-R arithmetic subtest; GORT or WRAT-T reading subtest; vocabulary, block design, arithmetic, digit span, and digit symbol subtests of WAIS-R	one another and more impaired than non-ADHD controls -ADHD women had higher rates of major depression, anxiety disorders, conduct disorder, school failure, and cognitive impairment than non-ADHD control females -ADHD females had lower conduct disorder rates than their male ADHD counterparts -Adult ADHD valid disorder in both men and women with impairment in psychosocial, cognitive, and school functioning
Biederman et al.	Patterns of psychiatric comorbidity, cognition, and psychosocial functioning in adults with attention deficit hyperactivity disorder. (1993).	n = 84 adults with childhood-onset ADHD n = 140 children with ADHD from a preexisting study group n=43 adult relatives with ADHD n= 248 adult relatives without ADHD	SCID; modules from Schedule for Affective Disorders and Schizophrenia for School-Age Children-Epidemiologic; KIDDIE-SADS-E; WRAT-R arithmetic subtest; Gilmore Oral Reading Test; WAIS-R	-Referred and non-referred adults with ADHD are similar to each other, and more impaired than those without ADHD -High rates of antisocial, major depression, and anxiety disorders in those with ADHD

			vocabulary, block design, arithmetic, digit span, and digit symbol	-Those with ADHD more likely to have repeated grades and need academic tutoring -Further supports the validity of the diagnosis of ADHD for adults
Biederman et al.	Are stimulants effective in the treatment of executive function deficits? Results from a randomized double blind study of OROS-methylphenidate in adults with ADHD. (2011).	n = 112 OROS-MPH n = 115 placebo Ages 19-60 years	Psychiatric evaluation; Structured Diagnostic Interview (SCID); medical history; vital signs; laboratory assessments; Clinical Global Impression Scale; Adult ADHD Symptom Investigator Scale (AISRS); Hamilton Depression Scale; WASI vocabulary and matrix reasoning; WRAT-III math; WASI-III digit span, arithmetic, letter-number sequencing; WAIS-III digit/symbol coding and symbol search; D-KEFS tower, color-word interference, and trails; Test of Word Reading Efficiency (TOWRE) sight word efficiency;	-Executive function not moderated by response to OROS-MPH -AISRS used in research

			attention network test (ANT); stop signal test; BRIEF-A	
Biederman et al.	An open-label trial of OROS methylphenidate in adults with late-onset ADHD. (2006).	N = 36 treated with OROS MPH Ages 19-60 years Mean age 39.6 years	Psychiatric evaluation; structured diagnostic interview (SCID); medical history; vital signs; laboratory assessments; Clinical Global Impression Scale; Adult ADHD Symptom Investigator Scale (AISRS)	-OROS MPH administered once daily was effective and well-tolerated -AISRS used to assess adult ADHD in research
Biederman et al.	A randomized, placebo-controlled trial of OROS methylphenidate in adults with attention-deficit/hyperactivity disorder. (2007a).	n = 72 to OROS MPH n = 77 placebo Ages 19-60 years	Psychiatric evaluation; Structured Diagnostic Interview (SCID); medical history; vital signs; laboratory assessments; Clinical Global Impression Scale; Adult ADHD Symptom Investigator Scale (AISRS); Hamilton Depression Scale	-OROS MPH more effective than placebo -First randomized clinical trial of OROS MPH in adult ADHD -AISRS rating scale used in this pharmaceutical research study
Biederman et al.	Comparative acute efficacy and tolerability of OROS and immediate release formulations of methylphenidate in the treatment of adults with	n= 99 placebo n= 79 IR-MPH n= 55 OROS-MPH Ages 19-60 years	Psychiatric evaluation, structured diagnostic interview (SCID), medical history, vital signs, laboratory assessments, Clinical	-OROS-MPH similar efficacy to IR-MPH -Both better than placebo -AISRS rating scale used in this pharmaceutical research study

	attention-deficit/hyperactivity disorder. (2007b).		Global Impression Scale, Adult ADHD Symptom Investigator Scale (AISRS), Hamilton Depression Scale	
Biederman et al.	Young adult outcome of attention deficit hyperactivity disorder: A controlled 10-year follow-up study. (2006).	n = 140 Caucasian males with ADHD n = 120 Caucasian males without ADHD Ages 6-18 years Reassessed at 10-year follow-up: 112 with ADHD and 105 without Mean age 22 years	K-SADS-E (Epidemiologic Version); SCID	-Lifetime prevalence for all categories of psychopathology were significantly greater in ADHD young adults when compared to controls, including antisocial, addictive, mood, and anxiety disorders
Brown, T. E.	Brown Attention-Deficit Disorder Rating Scale. (1996).	n = 100 adults (Phase 1: 50 met DSM-III criteria for ADHD, 50 nonclinical) n = 123 (Phase 2: 92 met ADHD DSM-III criteria, 93 nonclinical) Ages 18-40+ Racial/ethnic composition matched 1990 US Census estimates Matched on age and socioeconomic status	BADDS	-Publisher: Pearson PsychCorp -Self-report (40 items) -5 factors: (1) organizing and activating to work, (2) sustaining attention and concentration, (3) sustaining energy and (4) effort, managing effective interference, and (5) utilizing “working memory” and accessing recall -Likert scale: (0) never, (1) once a week or less,

				<ul style="list-style-type: none"> (2) twice a week, and (3) almost daily -Internal consistency .79-.92 -4% false negatives, 6% false positives -Limited reliability/validity data -Manual combined with information on BAADS adolescent scale -No items evaluating hyperactive-impulsive symptoms -Based on conceptual ideas of ADD (not factor analysis) -Normative sample and psychometric properties based on DSM-III -Did not report upper age limit of normative sample
Carlson, C. L., & Mann, M.	Sluggish cognitive tempo predicts a different patterns of impairment in the attention deficit hyperactivity disorder, predominantly inattentive type. (2002).	N = 2,744 children 76% Hispanic, 16% African American, 8% Caucasian 52% male	DSM-IV diagnostic checklist; 3 questions of social functioning adapted from Dishion, Teacher Rating Form (all measures completed by teachers)	<ul style="list-style-type: none"> -SCT children rated by teachers as having less externalizing behaviors -SCT children more at risk for unhappiness, anxiety, depression, withdrawn behavior, and social problems -Children with SCT may

				represent a separate category of nonhyperactive ADD
Cleland, C., Magura, S., Foote, J., Rosenblum, A., & Kosanke, N.	Factor structure of the Conners Adult ADHD Rating Scale (CAARS) for substance users. (2006).	N = 206 outpatients for drug and alcohol treatment	Conners' Adult ADHD Rating Scale self-report, short version (CAARS-S:S)	-Good internal consistency: coefficient alpha .74 - .89 for CAARS subscales A-D .85 for overall index -Compared with CAARS norms, substance users score significantly higher
Conners, C. K., Erhardt, D., & Sparrow, E.	Conners' Adult ADHD Rating Scales (CAARS). (1999).	n = 1,026 (self-report forms) Ages 18-80 years n = 943 (other-report forms) Ages 18-72 years	CAARS	-Publisher: Multi-Health Systems, Inc. -6 versions - Self-report long (66 items) -Other-report long (66 items) -Self-report short (26 items) -Other-report short (26 items) -Self-report screening (30 items) -Other-report screening (30 items) -9 factors (long forms): inattention/memory problems, hyperactivity/restlessness, impulsivity/emotional

				<p> labiality, problems with self-concept, DSM-IV inattentive symptoms, DSM-IV hyperactive-impulsive symptoms, DSM-IV ADHD symptoms total, ADHD Index, and the inconsistency index -6 factors (short forms): inattention/memory problems, hyperactivity/restlessness, impulsivity/emotional lability, problems with self-concept, ADHD index, and inconsistency index -4 factors (screening forms): DSM-IV inattentive symptoms, DSM-IV hyperactive/impulsive symptoms, DSM-IV ADHD symptoms total, and ADHD index - All forms: (0) not at all, never, (1) just a little, once in a while, (2) pretty much, often, and (3) very much, </p>
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				<p>very frequently</p> <ul style="list-style-type: none"> -Internal Consistency: .64-.91 (men- across age, subscales, and forms), .49-.90 (women- across age, subscales, and forms) -Test-retest: .85-.95 (other-report) -Convergent validity: .41-.61 (men), .41-.68 (women) -Additional psychometric data reported in other studies (Adler et al., 2008; Erhardt et al., 1999; Kooij et al., 2008; Van Voorhees, 2011) -Has inconsistency index -Large normative sample, but no information provided on ethnic composition
Conners, C. K., Sitarenios, G., Parker, J. D. A., & Epstein, J. N.	The revised Conners' Parent Rating Scale (CPRS-R): Factor structure, reliability, and criterion validity. (1998a).	Study 1: Scale Development: N = 2,200 students (1,099 males, 1,101 females) Ages 3-17 years 84% European American, 5% African	Conners' Parent Rating Scale- Revised (CPRS-R)	<ul style="list-style-type: none"> -Revised CPRS -Confirmatory factor analysis developed a factor structure with an updated item content -7 factor model: cognitive problems, oppositional, hyperactivity-impulsivity,

		<p>American, 4% Hispanic, and 7% Other</p> <p>Scale 2: Reliability, Internal Consistency, and Age and Sex Differences</p> <p>n = 49 from same sample as above (23 males, 26 females) rated by parent on two occasions 6 weeks apart</p> <p>Study 3: Criterion Validity</p> <p>n = 91 (68 males, 23 females)</p>		<p>anxious-shy, perfectionism, social problems, and psychosomatic</p> <p>-Psychometric properties: internal reliability, test-rest reliability, and discriminant</p> <p>-Validated and well-used rating scale to assess children's behavior, including ADHD symptoms</p>
<p>Conners, C. K., Sitarenios, G., Parker, J. D. A., & Epstein, J. N.</p>	<p>Revision and restandardization of the Conners Teacher Rating Scale (CTRS-R): Factor structure, reliability, and criterion validity. (1998b).</p>	<p>Study 1: Scale Development</p> <p>N = 1,702 students (832 males, 870 females)</p> <p>Ages 3-17 years</p> <p>83% European-American, 7% African American, 5% Hispanic, 5% other</p> <p>Study 2: Reliability, internal consistency, and age and sex differences</p> <p>n = 50 children from the sample above</p> <p>25 males, 25 females</p>	<p>Conners Teacher Rating Scale- Revised (CTRS-R)</p>	<p>-Using confirmatory factory analysis 6-factor structure developed: hyperactivity-impulsivity, perfectionism, inattention/cognitive problems, social problems, oppositionality, and anxious/shy</p> <p>-Satisfactory reliability: test-rest and internal consistency</p> <p>-Validity: 85% of children were correctly classified</p>

		<p>Study 3: Criterion Validity n= 91 children (68 males, 23 females) who were referred by parent/teacher to outpatient ADHD clinic and had independent diagnosis of ADHD using DSM-IV</p> <p>n = 160 children from main study (127 males, 33 females) referred for ADHD to outpatient clinic and had independent diagnosis of ADHD using DSM-IV criteria</p> <p>n = 160 children from main study (33 males, 127 females)</p>		-Commonly used to assess children's behavior in the classroom
Conners, C. K., Sparrow, E., & Erhardt, D.	Conners' Adult ADHD Rating Scales (CAARS): For use in correctional settings. (2004).	<p>n = 1,026 nonclinical adults (466 men, 560 women; ages 18-80 years) for self-report forms</p> <p>n = 943 nonclinical adults (433 men, 510 women; 18-72 years) for</p>	CAARS & CAARS:CE	<p>-Supplement to use in correctional settings (institutional and community forensic populations)</p> <p>-Offers guidance for using CAARS with offenders</p> <p>-Observer & self-report</p>

		<p>observer forms</p> <p>U.S. and Canada</p> <p>n = 509 offenders (incarcerated and community offenders)</p> <p>n = 220 forensic psychiatrists and psychologists</p>		<p>versions</p> <ul style="list-style-type: none"> -Long (66 items), short (26 items), & screening (30 items) -15 min. administration time -Factorial, discriminant, and construct validity
DeQuiros, G. B., & Kinsbourne, M.	Adult ADHD: Analysis of self-ratings on a behavior questionnaire. (2001).	<p>n = 48 ADHD patients</p> <p>n = 40 controls</p> <p>Ages 23-45 years</p>	Adult Problem Questionnaire (APQ); Conners Hyperactivity Index (CHI)	<ul style="list-style-type: none"> -Self-rating scales are useful and can corroborate presence of ADHD in adults -Adults can be forthcoming in identifying their behavior problems on questionnaires -Endorsed distractibility, impulsivity, and lack of control
DeVon et al.	A psychometric toolbox for testing validity and reliability. (2007).	Nursing articles published in the last 5 years	CINAHL, MEDLINE, and PsycINFO search using key words: validity, reliability, and psychometrics	<ul style="list-style-type: none"> -Criterion validity was rarely reported -Construct validity under-reported -Most reports included internal consistency -Under-reporting might occur because of small

				<p>sample size, poor design, or lack of resources</p> <ul style="list-style-type: none"> -Lack of information on psychometric properties common in literature -Article provides descriptions of validity and reliability
Deyo, R. A., Diehr, P., & Patrick, D. L.	<p>Reproducibility and responsiveness of health status measures: Statistics and strategies for evaluation. (1991).</p>	<p>N = 130 outpatients with low back pain for at least 3 months Mean age 51 years 58% women Mean duration of pain 5 years</p>	Modified Sickness Impact Profile	<ul style="list-style-type: none"> -Reviews several statistics for measuring reproducibility and responsiveness, and shows relationships among them -Discusses the intraclass correlation coefficient vs. Pearson r -Defines responsiveness: ability of an instrument to detect small but important clinical changes -Internal consistency -Re-test at one to two week intervals
DuPaul et al.	<p>Parent ratings of attention-deficit/hyperactivity disorder symptoms: Factor structure and normative data. (1998).</p>	<p>Study 1: Factor analysis and examination of effects of sex, age, and ethnic group on ADHD ratings N = 4,666 children/adolescents</p>	-Demographic information (age, sex, relationship to child, occupation, ethnic group); ADHD Rating Scale-IV: Home Version	<ul style="list-style-type: none"> -Support for the two factor model: hyperactivity-impulsivity and inattention -Use of rating scales in clinical practice -Teacher version also

		<p>Ages 4-20 years 85.7% Caucasian, 6.8% African American, 2.3% Hispanic, 2.1% Asian-America, .3% Native American, 1.3% Other, .5% unspecified Respondents: 4,071 mothers, 494 fathers, 39 guardians, 36 grandparents, 26 unspecified Study 2: Normative data N = 2,000 (1043 girls, 930 boys, 27 unspecified) randomly selected from Study 1 Respondents: 85.6% mothers, 11.3% fathers, 1.2% grandparents, 1.1% guardians, 1% unspecified</p>		available
DuPaul, G. J., Power, T. J., Anastopoulos, A. D., & Reid, R.	ADHD Rating Scale-IV: Checklists, norms, and clinical interpretation. (1998).	<p>n = 2,000 (1,043 girls, 930 boys, 27 unspecified)- Home version Kindergarten-12th grade Ages 4-20 years Sample similar to 1999 U.S. Census estimates for ethnic group and</p>	ADHD Rating Scale-IV	<p>-Scale for diagnosing ADHD in children and adolescents and for assessing treatment response -Ages 5-17 years -Directly linked to DSM-IV criteria -3 versions: parent scale</p>

		<p>region Most respondents were mothers and Caucasian</p> <p>Spanish version not standardized</p> <p>School version: n= 1,040 boys, 948 girls, and 12 unspecified</p>		<p>(English), parent scale (Spanish), and a teacher scale</p> <p>-4-point Likert scale: (0) never or rarely to (3) very often</p> <p>-Internal consistency: .86-.96 (both standardized versions)</p> <p>Test-retest: .78-90 (both standardized versions)</p> <p>-Inter-rater reliability between parents and teachers: .40-.45</p> <p>-Criterion validity: .61-.86 with Conners' Teacher Rating Scale</p> <p>-Discriminant and predictive validity also reported</p> <p>-Once manual is purchased, permission to photocopy scales</p>
Epstein, J. N., Conners, C. K., Sitarenios, G., & Erhardt, D.	Continuous performance test results of adults with attention deficit hyperactivity disorder. (1998).	<p>n = 39 adults with ADHD inattentive type</p> <p>n = 7 ADHD hyperactive/impulsive type</p> <p>n = 14 ADHD combined type</p> <p>Mean age 35 years</p>	Semistructured Interview for Adult ADHD; Continuous Performance Test (CPT)	<p>-Adults with ADHD made more errors of omission and commission</p> <p>-Similar results as child populations helps establish ADHD as a valid disorder of adulthood</p>

		34 males, 26 females N= 72 controls		-Adult ADHD has experienced increase in media and public awareness
Erhardt, D., Epstein, J. N., Conners, C. K., Parker, J. D. A., & Sitarenios, G.	Self-ratings of ADHD symptoms in adult II: Reliability, validity, and diagnostic sensitivity. (1999).	Internal consistency n = 394 males (mean age 38.8 years) n = 444 females (mean age 39.55 years) Test-retest reliability n = 33 males n = 28 females Concurrent validity n = 60 males n = 41 females Criterion validity n = 39 adults (23 males, 16 females) who met DSM-IV criteria for ADHD	CAARS; WURS; modified version of the Semistructured Interview for Adult ADHD	-CAARS coefficient alphas ranged from .86-.92 -Test-retest correlations .80-.91 -Significant correlations between CAARS factors and WURS total score (r = .37 - .67) -SENS 82% -SPEC 87% -Positive predictive power 87% -Negative predictive power 83% -False positive rate 13% -False negative rate 18% -Kappa = .70 -Overall correct classification rate 85%
Faraone, S. V., & Biederman, J.	What is the prevalence of adult ADHD? Results of a population screen of 966 adults. (2005).	N = 966 Age over 18 years 48% male, 52% female	Telephone survey-questionnaire including questions on ADHD symptoms from DSM-IV (narrow- if symptom occurred often, broad- if symptom occurred	-Estimated prevalence 2.9% narrow ADHD, 16.4% broad ADHD -Having ADHD associated with impairments such as lower levels of education

			sometimes)	and employment status -ADHD valid diagnosis in adults
Faraone, S. V., Biederman, J., Feighner, J. A., & Monuteaux, M. C.	Assessing symptoms of attention deficit hyperactivity disorder in children and adults: Which is more valid? (2000).	n = 280 ADHD families (140 boys and 140 girls) n = 242 non-ADHD families (120 boys and 122 girls) Ages 6-17 years	Schedule for Affective Disorders and Schizophrenia for School-Age Children: Epidemiologic Version(Kiddie SADS- E); Structured Clinical Interview for DSM-III- R	-ADHD is a valid adult diagnosis -Higher risk for children whose parents have persistent ADHD
Faraone et al.	Diagnosing adult attention deficit hyperactivity disorder: Are late onset and subthreshold diagnoses valid? (2006).	n = 127 who met DSM- IV criteria for childhood-onset ADHD n = 79 with late-onset ADHD who met all criteria except age-at- onset criterion n= 41 subthreshold ADHD who did not meet full symptom criteria n = 123 with no ADHD Ages 18-55 years	Structured Clinical Interview for DSM-IV; modules from the Schedule for Affective Disorders and Schizophrenia for School-Age Children Epidemiologic Version (K-SADS-E)	-Subjects with late-onset and full ADHD had similar patterns of psychiatric comorbidity, functional impairment, and familial transmission -Late-onset adult ADHD is a valid diagnosis -DSM-IV's age-at-onset criterion too stringent -Weak support for diagnosing subthreshold ADHD
Fayyad et al.	Cross-national prevalence and correlates of adult attention-deficit hyperactivity disorder. (2007).	N = 11,422 Ages 18-44 years 7 developed countries- Belgium, France, Germany, Italy, The Netherlands, Spain,	Interview in 2 parts: Part I- core diagnostic assessments; Part II given to respondents who met criteria in part I and a subsample-	-Prevalence averaged 3.4% (range 1.2-7.3%), with lower prevalence in lower-income countries (1.9%) compared with higher-income (4.2%)

		USA 3 less developed- Colombia, Lebanon, & Mexico	assessed disorders of secondary interest and correlates	-May be conservative estimate due to limitations -Cross-national variation small compared to other disorders -Higher prevalence in men and lower educational levels -Found ADHD to be comorbid with other disorders and impairments
Fischer, M., & Barkley, R.	Young adult outcomes of children with hyperactivity: Leisure, financial, and social activities. (2006).	n = 149 hyperactive children n = 72 controls Tracked 13-15 years to young adulthood (ages 19-25 years) 91% male, 9% female 94% White, 5% Black, 1% Hispanic	Interviews to gather information on amount of time spent in various leisure activities, monthly earning spent on various experiences and gambling activities; WAIS-R Vocabulary and Block Design	-Hyperactive group spent significantly more time watching TV, listening to music, talking on the phone, and engaging in hobbies -Hyperactive group lower quality of dating, fewer close friends, more trouble keeping friends, and more likely to argue
Fischer, M., Barkley, R. A., Edelbrock, C. S., & Smallish, L.	The adolescent outcome of hyperactive children diagnosed by research criteria II: Academic, attentional, and neuropsychological status. (1990).	n = 100 hyperactive children n = 60 community control children 2 groups: younger (12- 14 years) and older (15- 20 years)	Wide Range Achievement Test Revised (WRAML-R); Kagan Matching Familiar Figures Test-20 (MFFT-20); Continuous Performance Test;	-Hyperactive children impaired academic achievement, attention, impulse control and great off-task, restless, and vocal behavior when compared to controls

		Followed prospectively over 8 years	restricted academic situation; Selective Reminding Test; Wisconsin Card Sorting Test; Controlled Oral Word Association Test	-Hyperactive children may remain chronically impaired in academic achievement, inattention, and behavioral disinhibition
Fischer, M., Barkley, R. A., Smallish, L., & Fletcher, K.	Young adult follow-up of hyperactive children: Self-reported psychiatric disorders, comorbidity, and the role of childhood conduct problems and teen CD. (2002).	n = 147 hyperactive n = 71 controls Ages 19-25 years	SCID-NP for DSM-III-R; structured interview of ADHD and ODD symptoms in young adulthood; structured interview of antisocial behavior; Conners Parent Rating Scale-Revised (CPRS-R); Werry-Weiss-Peters Activity Rating Scale (WWPARS); parent reports of conduct disorder at adolescence	-Hyperactive group significantly higher risk of psychiatric disorders (59% vs. 36%) -More of the hyperactive group met criteria for ADHD (5%), major depressive disorder (26%), histrionic (12%), antisocial (21%), passive-aggressive (18%), and borderline (14%)
Flory, K., Molina, B. S. G., Pelham, W. E., Gnagy, E., & Smith, B.	Childhood ADHD predicts risky sexual behavior in young adulthood. (2006).	n = 175 men with childhood ADHD n = 111 controls Ages 18-26 years 85% Caucasian	Health and Sex Behavior Questionnaire; Disruptive Behavior Disorders scales	-Childhood ADHD predicted earlier initiation of sexual activity and intercourse, more sexual partners, more casual sex, and more partner pregnancies -Childhood conduct problems play a role in predicting risky sexual behavior among

				individuals with ADHD
Fried et al.	Characterizing impaired driving in adults with attention-deficit/hyperactivity disorder: A controlled study. (2006).	n = 26 adult ADHD subjects n = 23 adult controls	SCID; K-SADS-E; WASI Vocabulary and Matrix Reasoning or WAIS Vocabulary and Block Design; WAIS-III Oral arithmetic, digit span, digit symbol-coding, and symbol search; Manchester Driving Behavior Questionnaire (DBQ); driving history questionnaire	-More ADHD subjects have been in an accident on the highway (35% vs. 9%) or had been rear-ended (50% vs. 17%) -ADHD subjects had higher mean scores on the DBQ -ADHD drivers at risk for poor driving outcomes
Garner, A. A., Marceaux, J. C., Mrug, S., Patterson, C., & Hodgens, B.	Dimensions and correlates of attention deficit/hyperactivity disorder and sluggish cognitive tempo. (2010).	N = 322 children and adolescents Ages 5-17 years (mean age 9 years) 66% parent and teacher report, 14% teacher reports, 20% parent reports 77 females 66% Caucasian, 32% African American, 2% other	Disruptive Behavior Rating Scale; Child Behavior Checklist	-Factor analyses supported the presence of three separate but correlated factors: SCT, inattention, and hyperactivity/impulsivity -Support use of 4 CBCL items (confused/seems to be in a fog, daydreams, stares blankly, and apathetic/unmotivated) to assess SCT symptoms -SCT symptoms were associated with inattention, internalizing, and social problems
Gudjonsson, G. H.,	The relationship	N = 397 college students	DSM-IV Checklist of	-Adult ADHD

<p>Sigurdsson, J. F., Gudmundsdottir, H. G., Sigurjonsdottir, S., & Smari, J.</p>	<p>between ADHD symptoms in college students and core components of maladaptive personality. (2010).</p>	<p>in Iceland 35.5% males, 64.5% females Average age males 23 years Average age females 23.7 years</p>	<p>Symptoms (DCS); R&R2 ADHD Training Evaluation (RATE); Severity Indices of Personality Problems (SIPP)</p>	<p>significantly associated with functional impairment -Significant association between ADHD symptoms and core maladaptive personality problems (responsibility, self-control, and social concordance)</p>
<p>Hart et al.</p>	<p>Developmental change in attention-deficit hyperactivity disorder in boys: A four-year longitudinal study. (1995).</p>	<p>N = 177 clinic-referred boys meeting criteria for DSM-III-R ADHD Ages 7-12 years at 1st assessment Mean age 9.4 years 70% Anglo-Caucasian</p>	<p>NIMH Diagnostic Interview Schedule for Children (DISC)- child version, parent, and teacher (assessed annually for 4 years-based on DSM-III-R; WISC-R; treatment history)</p>	<p>-Hyperactivity-impulsivity symptoms declined with increasing age, but inattention did not -Inattention symptoms only declined from the 1st to 2nd assessment -Declines in hyperactivity-impulsivity due to increasing age of the subjects -ADHD may be a chronic disorder -Boys who still met criteria for ADHD in Years 3 & 4 were significantly younger, more hyperactive-impulsive, and more likely to exhibit conduct</p>

				disorder in Year 1
Hill, B. D., Pella, R. D., Singh, A. N., Jones, G. N., & Gouvier, W. D.	The Wender Utah Rating Scale: Adult ADHD diagnostic tool or personality index? (2009).	N = 522 Mean age 22.9 years 52% male 83% Caucasian, 12% African-American, 2% Hispanic/Latino, 1% Asian American	WURS-25 item; Wechsler Adult Intelligence Scale, 3 rd Edition (WAIS-III); Trail Making Test (TMT); Conners' Continuous Performance Test (CPT); d2 Test of Attention; Personality Assessment Inventory (PAI)	-Person product-moment correlations of WURS scores and neuropsychological tests: WAIS-III working memory (.085), WAIS-III processing speed (-.082), TMT (-.082), TMT part A (-.082), TMT part B (-.039), d2 omission errors (-.087), d2 commission errors (.025), d2 total number (-.022), d2 concentration performance (-.106), d2 fluctuation rate (.051), Conners' CPT RT (.002), Conners' CPT RT SE (.160), Conners' CPT SE variability (.191), Conners' CPT hit RT block change (-.053), Conners' CPT hit RT SE block change (.007), Conners' CPT hit RT ISI change (.101), Conners' CPT hit RT SE ISI change (.101) -Pearson product-moment correlations of WURS

				scores & PAI scales: somatic complaints (.285), anxiety (.462), anxiety-related disorders (.351), depression (.448), mania (.368), paranoia (.332), schizophrenia (.451), borderline features (.562), antisocial features (.211), drug problems (.180), aggression (.431), suicidal ideation (.279), stress (.315), nonsupport (.339), treatment rejection (-.467)
Jachimowicz, G., & Geiselman, R. E.	Comparison of ease of falsification of attention deficit hyperactivity disorder diagnosis using standard behavioral rating scales. (2004).	N = 80 college students never diagnosed with ADHD (49 women, 31 men) Mean age 19.29 years	Wender Utah Rating Scale (WURS); CAARS (self-report); Brown Adult ADHD Scale (BADDs); ADHD Rating Scale IV (ARS)	-ARS (15 positive diagnoses, 5 negative diagnoses), BADDs (19 positive, 1 negative) CAARS (18 positive, 2 negative), WURS (13 positive, 7 negative) -All scales can be significantly falsified: 75% ARS, 95% BADDs, 90% CAARS, 65% WURS -Authors expected 100% of population to test negative
Kessler et al.	The world health	N = 154 from the US	WMH version of the	-Each ASRS symptom

	organization adult ADHD self-report scale (ASRS): A short screening scale for use in the general population. (2005).	National Comorbidity Survey Replication (NCS-R) Ages 18-44 years Weighted to match the total sample of the NCS-R	CIDI including ASRS	was significantly correlated to the matching clinical symptom from DSM-IV -Kappa ranged from .16-.81 -The ASRS screener outperformed the 18-question ASRS in sensitivity (68.7% vs. 56.3%), specificity (99.5% vs. 98.3%) and total classification accuracy (97.7% vs. 96.2%) -The 18-item ASRS may outperform the screener
Kessler et al.	The prevalence and correlates of adult ADHD in the United States: Results from the national comorbidity survey replication. (2006).	N = 3,199 Ages 18-44 years	Screen for adult ADHD; blinded clinical interview (SCID) with n = 154; ADHD Rating Scale for childhood ADHD and an adaptation of the ADHD Rating Scale; World Health Organization (WHO) Composite International Diagnostic Interview (CIDI) 3.0; WHO Disability Assessment Schedule	-Estimated prevalence of adult ADHD 4.4%- 3.2% in women, 5.4% in men -Significantly correlated with being male, previously married, unemployed, and non-Hispanic White -Highly comorbid with other DSM-IV disorders and associated with substantial impairments

Kessler et al.	Patterns and predictors of attention-deficit/hyperactivity disorder persistence into adulthood: Results from the national comorbidity survey replication. (2005).	N = 3,197 subjects from the National Comorbidity Survey Ages 18-44 years	ADHD Clinical Diagnostic Scale (ACDS); WHO Composite International Diagnostic Interview (CIDI); SCID; family history interview	-36.3% met current criteria for ADHD -Childhood ADHD severity and childhood treatment significantly predicted persistence
Kessler et al.	Validity of the world health organization adult ADHD self-report scale (ASRS) screener in a representative sample of health plan members. (2007).	N = 668 adults in California and Georgia	ASRS Screener (twice to assess test-retest reliability and a 3 rd time with a clinical interviewer)	-Internal consistency ranged from .63-.72 -Test-retest reliability ranged from .58-.77 -Person correlations test-retest stability lower for the 0-6 scoring approach than for the 0-24 approach -ASRS screener can be used in epidemiological research and clinical work -Previous studies had focused on the 0-6 scoring approach, while this study shows more validity with the 0-24 scoring approach
Knouse, L. E., Bagwell, C. L., Barkley, R. A., & Murphy, K. R.	Accuracy of self-evaluation in adults with ADHD: Evidence from a driving study. (2005).	n = 44 ADHD adults n = 44 adult controls Mean age of ADHD adults 31.52 years	Driving simulations were conducted with a virtual reality driving simulator manufactured	-ADHD group had a higher rate of collisions, speeding tickets, and total driving citations

		Mean age of controls 32.34 years 84.1% Caucasian	as a police training simulator by FAAC; Driving History Survey; Driving Behavior Survey (DBS); questionnaire to estimate driving competence by percentile ranking of their driving ability and simulator performance	-ADHD adults report less use of safe driving behaviors -Adults with ADHD performed worse on naturalistic measures and over-estimated their competence -May relate to executive functioning deficits
Kollins, S. H., McClernon, J., & Fuemmeler, B. F.	Association between smoking and attention-deficit/hyperactivity disorder symptoms in a population-based sample of young adults. (2005).	N = 13,852 adolescents 49.5% male, 50.5% female 62.9% White, 37.1% Non-White	Separated into 2 groups based on smoking behavior: “ever-regular” smokers reporting having smoked at least 1 cigarette every day for 30 days and “never-regular smokers” who never tried smoking or had only taken 1 or 2 puffs or did not smoke regularly; self-reported age at onset; number of cigarettes smoked per day; retrospective report on ADHD symptoms experienced between 5 and 12 years; measure of CD symptoms	-ADHD found to be associated with adult smoking -Hyperactive symptoms better predictor of lifetime regular smoking than inattention symptoms -More ADHD symptoms associated with earlier regular smoking and greater cigarette consumption
Kooij et al.	Reliability, validity, and	n = 120 adults with	ADHD Rating Scale;	-ADHD Rating Scale:

	<p>utility of instruments for self-report and informant report concerning symptoms of ADHD in adult patients. (2008).</p>	<p>ADHD Mean age 36.6 years 55% male N = 100 partners N = 110 parents</p>	<p>Conners' Adult ADHD Rating Scales (CAARS); Brown Attention-Deficit Disorder Scale (BADDs); structured interview Diagnostic Interview Schedule-IV , section L (DIS-L)</p>	<p>Cronbach's alpha=.70-.80, low convergent validity for patient-partner (inattention $r=.386$, hyperactivity-impulsivity $r=.423$) and patient-investigator (inattention $r=.348$, hyperactivity-impulsivity $r=.440$), divergent validity ($r=.393, .327, .161$) -ADHD-RS had adequate validity, but convergent validity was too low when compared to divergent validity -BADDs reliability was $r=.685-.809$, convergent validity low ($r=.497-.729$), divergent validity ($r=.221-.671$) -Most values of divergent validity higher than convergent validity on BADDs indicating the five factors are not distinct -CAARS-L most reliability measures above .80, low</p>
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				<p>convergent validity (r=.439-.609), divergent validity values tended to be higher than convergent validity</p> <p>-DSI-L reliability r=.759, low convergent validity (r=.314 and .431), divergent validity tended to also be higher here</p> <p>-When examining the DSM-IV factors, the ADHD Rating Scale had the higher reliability, followed by the DIS-L and CAARS</p> <p>-Convergent validity of CAARS highest</p> <p>-CAARS had the highest number of missed diagnoses (39.1%)</p> <p>-BADDS & ADHD Rating Scale best in predicting clinical diagnosis</p> <p>-Adults with ADHD can report their symptoms but may underreport</p> <p>-Informant report also useful information</p>
Kooij et al.	Internal and external	N = 1,813 from an	General Health	-Factors of inattention,

	validity of attention-deficit hyperactivity disorder in a population-based sample of adults (2005).	automated general practitioner system in The Netherlands Ages 18-75 years	Questionnaire (GHQ-28); Dutch version of DSM-IV rating scale; interview	hyperactivity, and impulsivity as devised for children can also be generalized to adults -Four or more symptoms associated with significant increase in impairments
Lahey et al.	DSM-IV field trials for attention deficit hyperactivity disorder in children and adolescents. (1994).	N = 380 clinic referred ages 4-17 years	Diagnostic Interview for Children 2.3 (modified); Children's Global Assessment Scale; The Homework Problem Checklist; standardized clinical diagnoses	-Found three subtypes presented in DSM-IV (predominantly inattentive, predominantly hyperactive-impulsive, and combined types) to be appropriate division -Subtypes were found to be different across types of impairment, age, and sex ratio but not ethnicity -DSM-IV able to identify more impaired girls and preschool children -Generalizability to adults is unknown
La Malfa, G., Lassi, S., Bertelli, M., Pallanti, S., & Albertini, G.	Detecting attention-deficit/hyperactivity disorder (ADHD) in adults with intellectual disability: The use of Conners' Adult ADHD	N = 46 adults (30 males, 16 females) Mean age 37.6 years Intellectual disability: 9 mild, 20 moderate, 14 severe, 3 profound	CAARS screening version (self-report and observer- three educational therapists)	-Concordance = .87 Cronbach's alpha = .96 -ICC = .75 -Prevalence of "ADHD-positive" 19.6%

	Rating Scales (CAARS). (2008).			
Lambert, N. M., & Hartsough, C. S.	Prospective study of tobacco smoking and substance dependencies among samples of ADHD and non-ADHD participants. (1998).	N= 492 children (1/3 hyperactive) Adult data obtained from 81% of the 492 participants (77% ADHD, 86% controls)	Criteria from DSM-III-R; Children's Attention and Adjustment Survey (CAAS) home and school versions; adult interview derived from California Smoking Baseline Survey: Adult Attitudes and Practices and the Quick Diagnostic Interview Schedule	-ADHD participants smoke more cigarettes daily and were more tobacco dependent (age of initiation into smoking was not different) -ADHD subjects continued smoking into adulthood -Rates of cocaine dependence also higher
Lewandowski, L. J., Lovett, B. J., Coddling, R. S., & Gordon, M.	Symptoms of ADHD and academic concerns in college students with and without ADHD diagnoses. (2008).	n = 496 students without ADHD n = 38 with ADHD Ages 18-49 years 66% 1 st years, 20% 2 nd years, 14% upperclassmen 81% Caucasian, 6.5% African-American, 6% Hispanic, 2.5% multiracial	18 items taken from the DSM-IV checklist for ADHD; academic and test-taking concerns	-Students with ADHD reported significantly more ADHD symptoms and academic concerns -Poor specificity of symptoms and academic complaints casts doubt on the utility of self-reported information -Suggests caution in interpreting perceptions, complaints, and self-reports of college students -Thorough assessment of adult ADHD should include collaborative

				reports
Luty et al.	Validation of self-report instruments to assess attention deficit hyperactivity disorder symptoms in adults attending community drug and alcohol services. (2009).	N = 107 Mean age 37.8 63% men Drug and alcohol services for an average of 8.8 years (65% opiate dependence, 32% alcohol use) South East England	WHO Adult ADHD Self-report Screener (ASRS); Wender Utah Rating Scale (WURS); Conner's Adult ADHD Rating Scale (CAARS-S:L)	-ASRS: using recommended cutoff of 12/13 of 24, SENS 89%, SPEC 83%; a cutoff -WURS: cutoff of 36/37, SENS 88%, SPEC 70% -CAARS-S:L: cutoff of 91 of 198, SENS 97%, SPEC 83% -Most accurate self-report scale was CAARS-S:L
Mackin, R. S., & Horner, M. D.	Relationship of the Wender Utah Rating Scale to objective measures of attention. (2005).	N = 35 men referred for neuropsychological evaluation at the Department of Veterans Affairs Medical Center Mean age 41.8 years 83% White, 11% African-Americans, 6% unspecified	WURS- 25 item; Gordon Diagnostic System (GDS); Wechsler Adult Intelligence Scale-Revised (digit span); Wechsler Memory Scale- Revised (mental control); Trail Making Test part A	-Pearson product moment correlation coefficients of WURS score & neuropsychological tests: GDS vigilance commissions (.004), GDS vigilance correct (.093), digit span total (.113), digit symbol raw score (-.691), mental control (.518), trails A time (.061), WAIS-R FSIQ (.183), WAIS-R PIQ (.124), WAIS-R VIQ (.598), Age (.045), Education level (-.156) -No significant differences in WURS score between those

				<p>diagnosed with ADHD and those without</p> <ul style="list-style-type: none"> -Poor digit symbol associated with higher self-report of childhood ADHD symptoms
Magnusson et al.	<p>Validity of self-report and informant rating scales of adult ADHD symptoms in comparison with a semistructured diagnostic interview. (2006).</p>	<p>n = 80 women n = 46 men Ages 17-77 years</p>	<p>Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS) adapted for adults, with 18 DSM-IV behavioral criteria added</p>	<ul style="list-style-type: none"> -Alpha coefficients for women ranged from .82 - .96 -Alpha coefficients for men ranged from .81 - .96 -Coefficients for total scores on the diagnostic interview .58 - .78 (women) and .49 - .80 (men) -Coefficients between total scores on the diagnostic interview, self-ratings, and observer-ratings .55 - .83 (women) and .50 - .78 (men) -Highest correlations between diagnostic interview and self-report
Mannuzza, S., Klein, R. G., Bessler, A., Malloy, P., & LaPadula, M.	<p>Adult outcome of hyperactive boys: Educational achievement, occupational rank, and psychiatric status.</p>	<p>N = 91 hyperactive males Ages 13-19 years</p>	<p>Numbers of years of formal schooling completed; type of educational degree; Hollingshead and Redlich occupational</p>	<ul style="list-style-type: none"> -Significant comorbidity with antisocial personality disorders and substance uses disorders -Educational and occupational impairments

	(1993).		scale; occupational status; interviews using DSM-III-R	
Mannuzza, S., Klein, R. G., Bessler, A., Malloy, P., & LaPadula, M.	Adult psychiatric status of hyperactive boys grown up. (1998).	n = 85 ADHD subjects n = 73 controls Caucasian sample Prospective follow-up Mean age 24.1 years	Semi-structured interview that included DSM-III-R antisocial personality, attention deficit, anxiety, mood, substance, use, and psychotic disorders	-Higher prevalence of antisocial personality disorder and non-alcohol substance abuse -4% continued to meet ADHD criteria
McBurnett, K., Pfiffner, L. J., & Frick, P. J.	Symptom properties as a function of ADHD type: An argument for continued study of sluggish cognitive tempo. (2001).	N = 692 children Ages 3-18 years 78.5% males 84% Caucasian, 7% Hispanic, 4% African American, 2.4% Asian	SNAP-R (mother and teacher ratings of DSM symptoms);	-Forgets, daydreams, and sluggish/drowsy factor on SCT (not inattention) -Factor analysis distinguished sluggish tempo from inattention factor -Sluggish tempo items can be used for inattentive type, or may distinguish two subtypes of inattentive type -Current criteria in DSM-IV does not reflect symptoms of SCT
McCann, B. S., Scheele, L., Ward, N., & Roy-Byrne, P.	Discriminant validity of the Wender Utah Rating Scale for attention-deficit/hyperactivity disorder in adults. (2000).	N = 143 adults	WURS 25-item version	-Three factors accounted for 59.4% of variance: dysthymia, oppositional/defiant behavior, and school problems

				<ul style="list-style-type: none"> -Alpha coefficients: total = .95, dysthymia = .91, oppositional/defiant behavior = .90, school problems = .87 -Sensitivity 72.1% -Specificity 57.5% -TCA 64.5%
McCarney, S. B., & Anderson, P. D.	Adult Attention Deficit Disorders Evaluation Scale (A-ADDES): Home version. (1996a).	N = 2,003 adults Less males than females	A-ADDES home form	<ul style="list-style-type: none"> -Publisher: Hawthorne Educational Services Inc. -46 items -(0) do not engage, (1) one to several times per month, (2) one to several times per week, (3) one to several times per day, (4) one to several times per hour -Approximately 20 minutes -Factor analysis (2 subscales: inattentive and hyperactive-impulsive) -Internal consistency .95-.97 (self-report), .94-.97 (home), .96-.98 (work) -Test-retest: .77-.78 (self-report), .72-.80 (home), .80-.83 (work) -Inter-rater reliability ranged from .38-.62

				(home), .61-.73 (work) -Convergent validity: .49-.74 (self-report), .55-.75 (home), .58-.76 (work) -Discriminant validity: self-report and home -Keyed to DSM-IV symptoms
McCarney, S. B., & Anderson, P. D.	Adult Attention Deficit Disorders Evaluation Scale (A-ADDES): Self-Report Version. (1996b).	N = 2,204 adults Ages 18-71 years 68.6% women	A-ADDES self-report form	-Publisher: Hawthorne Educational Services Inc. -58 items -(0) do not engage, (1) one to several times per month, (2) one to several times per week, (3) one to several times per day, (4) one to several times per hour -Approximately 20 minutes -Factor analysis (2 subscales: inattentive and hyperactive-impulsive) -Alpha= .97 (high internal consistency) -Test-rest reliability pearson correlation coefficient= .77 -Content Validity
McCarney, S. B., & Anderson, P. D.	Adult Attention Deficit Disorders Evaluation	N = 1,867 adults Ages 18-65+ years	A-ADDES work form	-Publisher: Hawthorne Educational Services Inc.

	Scale (A-ADDES): Work Version. (1996c).			<ul style="list-style-type: none"> -54 items -(0) do not engage, (1) one to several times per month, (2) one to several times per week, (3) one to several times per day, (4) one to several times per hour -Approximately 20 minutes -Factor analysis (2 subscales: inattentive and hyperactive-impulsive) -Internal consistency .80 -Test-retest .66-.83 -Inter-rater reliability .61-.73
Millstein, R. B., Wilens, T. E., Biederman, J., & Spencer, T. J.	Presenting ADHD symptoms and subtypes in clinically referred adults with ADHD. (1997).	N = 149 adults Ages 19-60 years	Structured diagnostic interviews (SCID) for DSM-III-R; Hollinshead Four Factor Index of Social Status	<ul style="list-style-type: none"> -Inattentive symptoms most frequently endorsed in over 90% of ADHD adults -56% combined type -37% inattentive type -2% hyperactive/impulsive type -Gender differences no longer existed
Murphy, K., & Barkley, R. A.	Attention deficit hyperactivity disorder adults: Comorbidities	n = 172 adults diagnosed with ADHD n = 30 without ADHD	Portions of the SCID; author-constructed interview modules to	-Those with ADHD significantly greater prevalence of

	and adaptive impairments. (1996a).		detect symptoms of ADHD, oppositional defiant disorder, conduct disorder and adaptive functioning; Symptom Checklist 90-Revised; Locke-Wallace Marital Adjustment Test; Rating scales (current and childhood) of the 14 DSM-III-R	oppositional, conduct, substance abuse disorders, psychological maladjustment, speeding tickets, and job changes -Impairments: suspension of driver's license, fired from job, poorer educational performance -ADHD in adulthood associated with significant comorbidities and impairments -Validity of ADHD as a diagnosis in adults
Murphy, K., & Barkley, R. A.	Prevalence of DSM-IV ADHD symptoms in adult licensed drivers. (1996b).	N = 720 adults Ages 17-84 adults applying or renewing driver's licenses 60% males Mean age 35 years Males: 86% white, 5% black, 5% Hispanic, 1% Asian, 3% other Females: 85% white, 7% black, 2% Hispanic, 2% Asian, 2% other	Current symptoms scale and childhood symptoms scale	-Study used the 2 self-report rating scales from the earlier versions of the BAARS-IV -Scores and symptom counts for both scales declined significantly with age -Prevalence 1.3% inattentive type, 2.5% hyperactive-impulsive type, and .9% combined type -Lower prevalence rates could be due to restrictive DSM criteria for adults

Murphy, K. R., Barkley, R. A., & Bush, T.	Young adults with attention deficit hyperactivity disorder: Subtype differences in comorbidity, educational and clinical history. (2002).	n = 60 ADHD combined type n = 36 predominantly inattentive type n = 64 controls Ages 17-27 years	Kaufman Brief Intelligence Test; Structured Clinical Interview of Disruptive Behavior Disorders; ADHD Rating Scale for Adults; Symptom Checklist 90- Revised; Structured Interview for Educational, Antisocial, Drug/Alcohol, and Mental Health Services Histories	-Both ADHD groups had significantly less education, were less likely to have graduated from college, and were more likely to have received special education in high school -Both ADHD groups greater likelihood of dysthymia, alcohol dependence/abuse, cannabis dependence/abuse, learning disorders, and psychological distress -Combined type more likely to have oppositional defiant disorder, to experience hostility and paranoia, attempted suicide, and to have been arrested
Murphy, P., & Schachar, R.	Use of self-ratings in the assessment of symptoms of attention deficit hyperactivity disorder in adults (2000).	Study 1: n = 50 adults (28 women, 22 men) with parent questionnaire (43 mothers, 7 fathers) Ages 20-50 years Study 2: n = 100 adults	Questionnaires based on DSM-IV criteria for ADHD	-Good correlation found between subject and observer scores in both studies -Adults can accurately recall childhood and current symptoms of ADHD

		(47 females, 53 males) with partner questionnaire Ages 25-65 years		
Penny, A. M., Waschbusch, D. A., Klein, R. M., Corkum, P., & Eskes, G.	Developing a measure of sluggish cognitive tempo for children: Content validity, factor structure, and reliability. (2009).	N = 335 children in Canada n = 127 Nova Scotia (mean age 8.63 years, 43% male) n = 208 Ontario, mean age 8.46 years, 45% male), 89% Caucasian, 6% minorities, 5% unreported	Disruptive Behavior and Inattention Rating Scale combined with 14 SCT items authors developed; The Internalizing Scale	-Developed 14-item SCT scale -3 subscales: slow, sleepy, and daydreamer -Acceptable internal consistency, test-retest reliability, and inter-rater reliabilities -SCT subscales poorly correlated with hyperactive symptoms and strongly correlated with internalizing problems -Sleepy and daydreamer subscales may best represent SCT
Rossini, E. D., & O'Connor, M. A.	Retrospective self-reported symptoms of attention-deficit hyperactivity disorder: Reliability of the Wender Utah Rating Scale. (1995).	N = 83 undergraduate students (66 women, 17 men) Mean age 27.9 years 70 Caucasians, 5 African-Americans, 6 Asian-Americans, & 4 Hispanics	Wender Utah Rating Scale (WURS) full (61-item) and short (25-item) versions	-Alpha .89 (full version) -Alpha .88 (short version) -ICC .68 (full version) -ICC .74 (short version) - r = .81 (both versions)
Roy-Byrne et al.	Adult attention-deficit hyperactivity disorder:	n = 46 ADHD adults n = 46 controls	Brief Symptom Inventory/Symptom	-ADHD group had greater history of learning

	Assessment guidelines based on clinical presentation to a specialty clinic. (1997).	n = 51 ADHD-like features but did not meet criteria	Checklist, Drug Abuse Screening Test (DAST); Alcohol Use Disorders Inventory Test (AUDIT); Social Adjustment Scale- Self-Report Version (SAS-S); Wide-Range Achievement Test (WRAT); Continuous Performance Test (CPT); Wender Utah Rating Scale (WURS)	disability in childhood, poorer reading scores, poorer scores on CPT, and higher scores on WURS -Subjects in the ADHD-like group had higher rates of substance abuse than both other groups -Rating scales can help clarify diagnosis
Shekim, W. O., Asarnow, R. F., Hess, E., Zaucha, K., & Wheeler, N.	A clinical and demographic profile of a sample of adults with attention deficit hyperactivity disorder, residual state. (1990).	N = 56 ADHD adults Ages 19-65 years 48 men, 8 women	Schedule for Affective Disorders and Schizophrenia- Lifetime Version (SADS-L); Symptoms Checklist Revised (SCL-90R); Conners Attention Deficit Disorder with Hyperactivity Scale (ADDH); structured interview with ADDH; global assessment of functioning; Utah Criteria for adult ADHD	-Majority of sample had additional DSM-III-R diagnoses, only 7 had ADHD alone -53% met criteria for generalized anxiety disorder -34% alcohol abuse or dependence -30% drug abuse -25% dysthymic disorder -25% cyclothymic disorder
Simon, V., Czobor, P., Balint, S., Meszaros, A., & Bitter, I.	Prevalence and correlates of adult attention-deficit hyperactivity disorder:	6 population-based studies	Meta-analysis of epidemiological adult ADHD studies, excluding follow-up and	-Average 2.5% prevalence but varied dramatically between studies possibly due to

	Meta-analysis. (2009).		family studies	methodological differences -Prevalence of ADHD in adults declines with age, but it may be due to diagnostic restrictions -DSM-IV may lead to underestimate of ADHD due to criterion
Spencer et al.	Validation of the adult ADHD investigator symptom rating scale (AISRS). (2010).	Ages 18-54 years with ADHD as of DSM-IV-TR n= 250 receiving atomoxetine n= 250 controls	Adult ADHD Investigator Symptom Rating Scale (AISRS); Conners' Adult Attention-Deficit/Hyperactivity Disorder Rating Scale- Investigator Rated: Screening Version (CAARS- Inv:SV); Clinical Global Impression-ADHD-Severity Scale; Montgomery and Asberg Depression Rating Scale; State Trait Anxiety Inventory	-AISRS high internal consistency, good convergent and discriminant validities, modest divergent validity, and small ceiling and floor effects -Correlates highly with the CAARS-Inv:SV -Factor analysis confirms 2 AISRS subscales: hyperactivity-impulsivity and inattention -Valid measure to assess ADHD symptoms in adults -Authors assert the items and semi-structured interview enhance the scale
Spencer et al.	A randomized, single-blind, substitution study	n = 14 continue IR-MPH n = 41 randomized to	Psychiatric evaluation; Structured Diagnostic	-OROS-MPH was as effective as IR-MPH in

	of OROS methylphenidate (Concerta) in ADHD adults receiving immediate release methylphenidate. (2011).	OROS-MPH Ages 19-60 years	Interview (SCID); medical history; vital signs; laboratory assessments; Clinical Global Impression Scale; Adult ADHD Symptom Investigator Scale (AISRS); Hamilton Depression Scale, Hamilton Anxiety Scale, treatment satisfaction measured by a scale developed by Swanson et al. 2000	adults -Of those who switched to OROS-MPH, 71% were satisfied -Better compliance with OROS-MPH than IR-MPH -AISRS used in research
Stein et al.	Psychometric characteristics of the Wender Utah Rating Scale (WURS): Reliability and factor structure for men and women. (1995).	n = 310 fathers (mean age 36.4 years) n = 305 mothers (mean age 33.8 years) of children referred for ADHD n = 57 adults (test-retest, 1 month apart)	Wender Utah Rating Scale (WURS) full version	-For males, 5-factors: conduct problems, learning problems, stress intolerance, attention problems, and poor social skills/awkward -For females, 5-factors: dysphoria, impulsive/conduct, learning problems, attention and organizational problems, and unpopular -Cronbach's alpha .72 - .85 (males) & .69 - .89 (females) -Test-retest .70 - .89

				(males) & .84 - .90 (females)
Sullivan, B. K., May, K., & Galbally, L.	Symptom exaggeration by college adults in attention-deficit hyperactivity disorder and learning disorder assessments. (2007).	N = 66 comprehensive assessment cases of ADHD and/or LD	Word Memory Test (WMT), ADHD/LD assessment (including self-report inventories)	-WMT scores were positively correlated intellectual and neurocognitive test scores -WMT negatively correlated with self-report inventory scores -Poor effort “implies” symptom exaggeration -Need for symptom validity measures
Surman et al.	Atomoxetine in the treatment of adults with subthreshold and/or late onset attention-deficit hyperactivity disorder-not otherwise specified (ADHD-NOS): A prospective open-label 6-week study. (2010).	n = 43 ADHD-NOS n = 1 subthreshold ADHD n = 1 both late onset and subthreshold ADHD Ages 19-56 years (mean age 39.5 years) 58% male	Psychiatric evaluation; Structured Diagnostic Interview; medical history; vital signs, laboratory assessments; SCID; Clinical Global Impression Scale; AISRS; Global Assessment of Functioning	-Clinically and statistically significant response -First clinical trial of atomoxetine for adults with ADHD-NOS -AISRS used in research
Torgersen, T., Gjervan, B., & Rasmussen, K.	ADHD in adults: A study of clinical characteristics, impairment and comorbidity. (2006).	N = 45 adults with ADHD (34 men 11 women) Mean age 28.3 years	Comprehensive psychiatric examination; when possible parents, teachers, and other relevant person were interviewed about patient’s childhood; neuropsychological	-Impaired in academic achievement, employment, and criminality -High levels of comorbidity, especially with alcohol and drug abuse, antisocial

			battery; symptom checklist 90-items; symptom checklist for hyperkinetic disorders	personality disorder, and depression -ADHD diagnosis was missed in most cases in childhood
Triolo, S. J., & Murphy, K. R.	Attention-deficit scales for adults (ADSA). (1996).	N = 306 (139 females, 167 males) 82% white, 13.7% black, 1.3% Asian, 1.6% Hispanic, less than 1% Native American Most from NE and SE regions of US	ADSA	-Publisher: Brunner/Mazel Publishers: A member of the Taylor & Francis group -54 items -5-point Likert scale: ever, seldom, sometimes, often, always -Approximately 20 minutes -Factors: attention-focus/concentration, interpersonal, behavior-disorganized activity, coordination, academic theme, emotive, consistency/long-term, childhood, and negative-social -Internal consistency .89 (total score), .02-.82 alpha clusters, .81 split-half -Sensitivity 82%, Specificity 91%, TCA

				89% (based on 4 subscales) -No informant forms -Manual not as comprehensive as others -Limited reliability and validity data -Did not report age range in normative sample -Only available through Psychology Press (UK)
Van Voorhees, E. E., Hardy, K. K., & Kollins, S. H.	Reliability and validity of self- and other-ratings of symptoms of ADHD in adults. (2011).	N = 349 adults Ages 18-70 years Mean age 32 years CAARS-O: n=111 friend, n= 49 parents, n= 115 spouses, n= 74 others 38.5% women 86.4% Caucasian, 5.1% African-American, 1.8% Hispanic, 2.9% Asian, 3.7% biracial or other	Conners' Adult ADHD Scale- Self: Long Version (CAARS-S:L); Conners' Adult ADHD Rating Scale- Observer: Long Version (CAARS-O); computerized Structured Clinical Interview for the DSM-IV (CAADID), Parts I and II; semi-structured clinical interview; when available, psychoeducational test results, medical records, and school records	-Item-level concordance rates ranged from slight to fair -Poor sensitivity and specificity in predicting ADHD diagnosis -High percentage of participants with internalizing disorders (anxiety and depression) had scores in clinical range -Self- and observer-ratings on the CAARS provide clinically relevant data about attention problems in adults, but does not effectively distinguish between ADHD and other

				adult psychiatric disorders
Wahlstedt, C., & Bohlin, G.	DSM-IV-defined inattention and sluggish cognitive tempo: Independent and interactive relations to neuropsychological factors and comorbidity. (2010).	N = 209 children Mean age 8 years 111 boys	Stroop task; Go/No-Go paradigms; Children's Size-Ordering Task; Pig House; WISC-III (Information and Block Design); ADHD and ODD symptoms rating scale; Childhood Behavior Checklist-Teacher (5 items); Emotional Problem Scale; teachers rated academic achievement on 5-point Likert scale	-DSM-IV inattention and SCT have neuropsychological processes and comorbid behavioral problems in common (internalizing problems and academic achievement) -DSM-IV symptoms related to inhibitory control, working memory, state regulation, internalizing problems, and poor academic achievement -DSM-IV inattention more related to executive dysfunction -SCT more related to sustained attention -
Ward, M. F., Wender, P. H., & Reimherr, F. W.	The Wender Utah Rating Scale: An aid in the retrospective diagnosis of childhood attention deficit hyperactivity disorder. (1993).	n = 81 adult outpatients with ADHD (mean age 30.7 years) n = 100 controls (42.5 years) n = 70 adult outpatients with unipolar depression (mean age 39.8 years)	Wender Utah Rating Scale; Parents' Rating Scale (when available)	-Patients with ADHD had significantly higher mean scores on all 25 items than both control groups -Correlations between WURS and parent rating scales were moderate -WURS able to identify

				childhood ADHD
West, S. L., Mulsow, M., & Arredondo, R.	Factor analysis of the attention deficit scales for adults (ADSA) with a clinical sample of outpatient substance abusers. (2003).	N = 268 (170 males, 92 females, 6 unspecified) Caucasian (77%), Hispanics (18%), African Americans (3%) Mean age 37.52 years Primary drug of choice: alcohol (51%), alcohol and drug (8%), opiates (8%), polydrug (8%), cocaine (8%), cannabis (5%), amphetamines (3%), sedatives (2%), heroin (1%), barbiturates (1%), inhalants (.3%)	ADSA	-7 factors were found -Of all the factors, a majority of items were included in factor 1 -High reliability (alpha=.93 total, .89 for males, .94 for females) -ADSA may measure a single dimension -Construct validity: ADSA and a second measure (unidentified) comprised of the 18 DSM-IV symptoms -Total ADSA score was significantly correlated with all three DSM-IV dimensions (inattention, hyperactivity, and impulsivity)
Whalen, C. K., Jamner, L. D., Henker, B., Delfino, R. J., & Lozano, J.	The ADHD spectrum and everyday life: Experience sampling of adolescent moods, activities, smoking, and drinking. (2002).	N = 153 adolescents with low, middle, or high levels of ADHD symptoms Mean age 14 years 52% Caucasian, 16% Asian, 7% Latino, 4% African-American, 21% mixed or other	Teen Health Screening Survey; Conners' Parenting Rating Scale-Revised (CPRS-R); Conners-Well's Adolescent Self-Report Scale (CASS); custom diary program installed on Palm III	-Those with high ADHD symptom levels had more negative and fewer positive moods (elevated rates of anger, anxiety, stress, and sadness), lower alertness, more entertaining activities relative to achievement-oriented pursuits, more

				time with friends vs. family, and more tobacco and alcohol use -ADHD characteristics associated with behavioral patterns that promote more deviance, unhealthy lifestyle behaviors, and vulnerability to nicotine dependence
Wierzbicki, M.	Reliability and validity of the Wender Utah Rating Scale for college students. (2005).	N = 111 college students (24 men, 86 women, 1 unknown) Age range 18 – 24 years n = 67 (time 2)	WURS; Beck Depression Inventory; mood related events of the Unpleasant Events Schedule; Automatic Thoughts Questionnaire	-Coefficient alpha: .87 time 1 & .89 time 2 (WURS-61) & .89 time 1 and .91 time 2 (WURS-25) -Test-retest: .68 (WURS-61) & .61 (WURS-25) -WURS & depressive symptoms: .33 - .47 -Dysphoria: .35 - .55
Zhang, S., Faries, D. E., Vowles, M., & Michelson, D.	ADHD rating scale IV: Psychometric properties from a multinational study as a clinician-administered instrument. (2005).	N = 604 patients 14 countries Ages 6-15 years Mean age 10.24 years	ADHD-RS-IV; KADS-PL semi-structured interview	-Article reviewed psychometric properties including inter-rater reliability, factor structure, internal consistency, test-retest reliability, discriminant validity, and responsiveness -ADHD-RS-IV found to

				<p>have acceptable psychometric properties including inter-rater reliability, test-retest reliability, internal consistency, factor structure, convergent and divergent validity, discriminant validity, and responsiveness</p> <ul style="list-style-type: none"> -Results comparable to other validated scales -Consistent across the 14 countries
Zucker, M., Morris, M. K., Ingram, S. M., Morris, R. D., & Bakeman, R.	Concordance of self- and informant ratings of adults' current and childhood attention-deficit/hyperactivity disorder symptoms. (2002).	<p>N = 281 53.7% males, 46.3% females Mean age 23.59 years 84.7% Caucasian, 7.8% African-American, 7.5% other Informants were predominantly parents 69.8%, 13.2% friends/roommates, 10.7% partners, 5.7% others</p>	Participants and informants completed two versions (childhood and current symptoms) of the ADHD Behavior Checklist for Adults	<ul style="list-style-type: none"> -Concordance levels were similar for current and childhood symptoms -Informants endorsed more significant inattention symptoms -Reliability of using behavior rating scales for adult ADHD

Section B- Non-Empirical Literature

Author	Title/Year	Purpose	Summaries/Key Findings/Comments
Achenbach, T. M.	Manual for the child behavior checklist/ 4-18 and 1991 profile. (1991a).	Rating scale in which parents and informants rate their child's problem behaviors and competencies.	<ul style="list-style-type: none"> -First section of questionnaire consists of 20 competence items -Second section consists of 120 items on behavioral or emotional problems during the past 6 months (two versions exist: ages 1.5-5 years and 6-18 years) -Validated and well-used rating scale to assess child/adolescent ADHD and its comorbid problems
Achenbach, T. M.	Manual for the teacher's report form and 1991 profile. (1991b).	Rating scale that obtains teacher's reports of children's academic performance, adaptive functioning, and behavioral/emotional problems.	<ul style="list-style-type: none"> -Teacher's rate children's academic performance in each subject on a 5-point scale ranging from 1 (far below grade level) to 5 (far above grade level) -For adaptive functioning teachers use a 7-point scale to compare the child to typical peers for their behavior, learning, and emotional skills -Validated teacher's rating scale to assess ADHD and other behavioral/emotional problems
Achenbach, T. M.	Manual for the youth self-report and 1991 profile. (1991c).	Youth self-report (YSR) allows children/adolescents to rate themselves on their behavioral and emotional well-being in the past 6 months.	<ul style="list-style-type: none"> -Parallels the parent form and provides self-ratings for 20 competence and problem items -Same three-point rating scale as parent and teacher forms -Ages 6-18 years -Also includes open-ended responses to include physical problems, concerns, and strengths

Adler, L. A.	Clinical presentations of adult patients with ADHD. (2004).	Describes what symptoms may present in adult ADHD, including case reports.	<ul style="list-style-type: none"> -ADHD persists into adulthood -Symptoms similar to those seen in childhood: restlessness, distractibility, and impulsivity, but the expression of symptoms changes as age increases -Use of retrospective reporting and rating scales to determine diagnosis -Prevalence of comorbid disorders
Adler, L., & Cohen, J.	Diagnosis and evaluation of adults with attention-deficit/hyperactivity disorder. (2004).	Overview of the history of ADHD, symptom criteria, comorbidity, presenting problems, educational/occupational challenges, gender/cultural considerations, and rating scales.	<ul style="list-style-type: none"> -DSM-IV first to acknowledge that “full-fledged” ADHD can persist into adulthood -Gender ratio may be more like 2:1 in adults, and clinicians may see more women presenting with symptoms who were overlooked in childhood because of their lack of hyperactive/impulsive, oppositional symptoms -Prevalence rates similar across cultures; however, cultural differences play a role in how the disorder is interpreted -Article also provides a brief description of rating scales available to assess ADHD, but with no reliability/validity data
Adler, L., Kessler, R. C., & Spencer, T.	Adult ADHD Self-Report Scale (ASRS) Symptom Checklist. (2003).	The ASRS- available online.	<ul style="list-style-type: none"> -Based on DSM-IV criteria (revised to more accurately fit manifestation of ADHD in adults) -18 items (9 inattention and 9 hyperactivity/impulsivity) -Rate items on past 6 months -5-point Likert scale: (0) never, (1) rarely, (2) sometimes, (3) often, and (4) very often -Score 24 points or more on either section

			<p>patient is highly likely to have ADHD, score between 17-23 somewhat likely</p> <ul style="list-style-type: none"> -Takes about 5 minutes to complete scale -Available free online
American Academy of Child and Adolescent Psychiatry.	Practice parameter for the assessment and treatment of children and adolescents with attention-deficit hyperactivity disorder. (2007).	Describes the assessment and treatment of children and adolescents with ADHD based on current scientific evidence and clinical consensus of experts.	<ul style="list-style-type: none"> -Discusses the clinical evaluation of ADHD, comorbid disorders, etiology, and psychopharmacological and psychosocial interventions -Recommendations: screening for ADHD, review of medical, social, and family history, neurological testing if indicated, evaluate for comorbid conditions, and comprehensive treatment plan -Lists common behavior ratings scales used in the assessment and monitoring treatment
American Psychiatric Association.	Diagnostic and statistical manual of mental disorders (4 th ed.). (2000).	Provides standard criteria for the classification of mental disorders. Includes diagnostic features, associated features, prevalence, course, differential diagnosis, and diagnostic criteria for each disorder.	<ul style="list-style-type: none"> -Provides current criteria for ADHD -Separate criteria does not exist for adult ADHD -Under revision (DSM-V)
American Psychiatric Association.	American Psychiatric Association: DSM-5 development. (2012).	Website providing the draft revisions being considered for the DSM-5.	<ul style="list-style-type: none"> -www.DSM5.org -Set for publication May 2013 -Includes revisions to make it easier to diagnose ADHD in adults -For older adolescents and adults (17+), only 4 symptoms are required -Describes how some symptoms may manifest in adults
Barkley, R. A.	Child behavior rating	Chapter reviewing and	-Review of rating scales that can be

	scales and checklists. (1988).	critiquing a number of rating scales for children/adolescents.	completed by parents or teachers assessing dimensions of child psychopathology -Reviewed scales include the Conners Rating Scale and CBCL -Rating scales have been used to assess child/adolescent psychopathology (including ADHD) for many years
Barkley, R. A.	Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment (2 nd ed.). (1998).	Book for clinicians divided into 3 sections: (a) nature and diagnosis, (b) assessment, and (c) treatment. Part A includes history, symptoms, criteria, prevalence, impairments, comorbid disorders, developmental course, and a theory of ADHD. The assessment section is comprised of multiple chapters from different authors, including a section on assessing ADHD in adults. Part C focuses on treatment.	-Describes theory of ADHD, including ADHD as a developmental disorder -Criteria should reflect age-related changes; current criteria not developmentally sensitive -Multiple impairments and comorbidities associated with ADHD -Persists into adulthood
Barkley et al.	Consensus statement on ADHD. (2002).	Researchers and clinicians created a consensus statement on ADHD out of concern that the media portrayed ADHD as a “myth, fraud, or benign condition” (p. 96).	-Recognition of ADHD as a disorder by psychiatric and medical researchers. -Impairments in major life activities such as education, social relationships, family functioning, independence and self-sufficiency, adherence to social rules/norms/laws, and occupational functioning -Current evidence indicates deficits in

			<p>behavioral inhibition and sustained attention</p> <ul style="list-style-type: none"> -Also notes genetic contribution -ADHD individuals more likely to drop out of school (32-40%), rarely complete college (5-10%), have few or no friends (50-70%), under perform at work (70-80%), engage in antisocial activities (40-50%), and use tobacco or substances -In addition, individuals with ADHD are more at risk to experience teenage pregnancy (40%), sexually transmitted diseases (16%), speed excessively and have multiple car accidents, to experience depression (20-30%), and personality disorders as adults (18-25%)
Barkley, R. A., & Cox, D.	A review of driving risks and impairments associated with attention-deficit/hyperactivity disorder and the effects of stimulant medication on driving performance. (2007).	Review of scientific literature on driving risks and impairments associated with ADHD and the effects of stimulants on driving performance.	<ul style="list-style-type: none"> -Well-documented driving risks and impairments associated with ADHD -Positive effects of stimulant medications on driving performance
Barkley, R. A., & Murphy, K. R.	Attention-deficit hyperactivity disorder: A clinical workbook (2 nd ed.). (1998).	Book describing the nature and diagnosis, assessment, and treatment of ADHD, including a chapter on assessing adult ADHD.	-Provides assessment and treatment forms, questionnaires, and handouts
Biederman, J.	Impact of comorbidity in adults with attention-	Review of research on persistence/prevalence of adult	-Ratio of male to female in adult population 3:2

	deficit/hyperactivity disorder. (2004).	ADHD and its comorbidities: antisocial disorders, mood and anxiety disorders, alcohol and substance abuse and dependence including potential economic costs.	-Individuals with ADHD have a higher lifetime prevalence of conduct disorder, oppositional defiant disorder, and antisocial personality disorder -Higher rates of anxiety disorders, alcohol and drug abuse/dependence more common in individuals with ADHD -Social and economic consequences of undiagnosed and untreated adult ADHD can be costly
Brown, T.	Differential diagnosis of ADD versus ADHD in adults. (1995).	Chapter from book where Brown addresses the differential diagnosis of ADHD with hyperactivity and ADHD without hyperactivity.	-Core symptoms of ADHDs are cognitive impairments -These cognitive symptoms are the most central impairment especially for adults -Inability to “make themselves do it” when they need to get organized or sustain attention for uninteresting tasks -Brown conceptualizes ADHD inattentive type in 5 clusters: (1) activating and organizing to work, (2) sustaining attention, (3) sustaining energy and effort, and (4) moodiness and sensitivity to criticism, and (5) memory recall -Focus on ADHD predominantly inattentive type, which made be harder for clinicians to identify because it is not as readily observable as hyperactivity-impulsivity symptoms
Cicchetti, D. V.	Guidelines, criteria, and rules of thumb for evaluating normed and	Reviews standardization procedures, norming procedures, test reliability, and test validity.	-Internal consistently most often measured by coefficient alpha or Kuder-Richardson (KR-20) formula

	standardized assessment instruments in psychology. (1994).		<ul style="list-style-type: none"> -Other reliability measurements include kappa and intraclass correlation coefficient -Guidelines for internal consistency coefficient alpha (Cicchetti & Sparrow, 1990): <.70 unacceptable, .70-.79 fair, .80-.89 good, and >.90 excellent -Other reliability coefficients: <.40 poor, .40-.59 fair, .60-.74 good, and >.75 excellent
Cicchetti, D. V. & Sparrow, S.	Assessment of adaptive behavior in young children. (1990).	A book chapter review of adaptive behavior scales.	<ul style="list-style-type: none"> -Provides definitions or reliability properties -Internal consistency correlations of .70 or higher are considered acceptable -Guidelines for internal consistency: <.70 unacceptable, .70-.79 fair, .80-.89 good, and >.90 excellent
Collett, B. R., Ohan, J. L., & Myers, K. M.	Ten-year review of rating scales V: Scales assessing attention-deficit/hyperactivity disorder. (2003).	Article summarizes scales assessing ADHD in children and adolescents. The authors reviewed articles on ADHD over the past decade and selected scales based on the DSM-IV construct of ADHD.	<ul style="list-style-type: none"> -Reviewed psychometric properties -Ratings scales can be a reliable, valid, and efficient measure of ADHD -Example of how to organize review of ADHD rating scales (general description, scales and scoring, normative data, psychometric properties, applications, and advantages/disadvantages) -Did not review any adult scales
Conners, C. K., & Jett, J. L.	Attention deficit hyperactivity disorder (in adults and children): The latest assessment and treatment strategies. (1999).	A book reviewing information on how to diagnose, assess, and treat ADHD. Chapters include general information on ADHD, criteria, medication, psychosocial treatment, assessment measures, and	<ul style="list-style-type: none"> -Current criteria may not accurately reflect presentation in adulthood -Describes typical behaviors seen in adults with ADHD (avoiding activities requiring sustained attention, problems finishing tasks, impulse shopping, frequent job changes, etc.)

		differential diagnoses.	<ul style="list-style-type: none"> -Brief overview of rating scales for children and adolescents -Limited scales available for adult assessment of ADHD
Davidson, M. A.	ADHD in adults: A review of the literature. (2008).	Examined current research regarding ADHD and provided information on assessment, diagnosis, and treatment.	<ul style="list-style-type: none"> -A valid and reliable assessment of ADHD should include symptom rating scales, a clinical interview, neuropsychological testing, and corroboration of patient reports -More specific diagnostic criteria in regards to adult ADHD is needed -Self-report and informant checklists are commonly used in assessment of ADHD -Scales included: CAARS-IV, Brown ADD-RS, WURS, CSS, ADHD RS-IV, and ASRS-v1.1
DeVellis, R. F.	Scale development: Theory and Applications (2 nd ed.). (2003).	Describes the rationale and method of scale development for research.	<ul style="list-style-type: none"> -Overview of the latent variable, reliability, validity, guidelines in scale development, factor analysis, item response theory, and measurement
Diamond, A.	Attention-deficit disorder (attention-deficit/hyperactivity disorder without hyperactivity): A neurobiologically and behaviorally distinct disorder from attention-deficit/hyperactivity disorder (with hyperactivity). (2005).	Article supporting ADHD inattentive-type as a separate disorder from ADHD with hyperactivity.	<ul style="list-style-type: none"> -Main problem in ADHD-IA (inattentive-type) is in working memory -May be easily bored and under-aroused -Primary brain dysfunction may be in the cortex (frontal-parietal) for ADHD-IA rather than frontal-striatal as in combined type -Support ADHD-IA as a separate disorder -Differs in cognitive and behavioral profiles, comorbidities, response to treatment, and neurobiologically
DuPaul, G. J., Power, T.	ADHD rating scale-IV:	Manual to administer ADHD	<ul style="list-style-type: none"> -Updated information on scale's

J., Anastopoulos, A. D., & Reid, R.	Checklists, norms, and clinical interpretation. (1998).	rating scale (ADHD RS-IV) to children and adolescents. Chapters include introduction to ADHD rating scales, factor analysis, standardization and normative data, reliability and validity, interpretation and use of scales for diagnostic and screening purposes, and interpretation and use of scales for evaluating treatment outcome.	development -Scoring profiles for ages 5-17 -Contains 18 items that are linked to DSM-IV diagnostic criteria -Includes parent and teacher questionnaires -Norms for parent and teacher ratings -Findings on reliability and validity -Included in price of manual is permission to photocopy and reproduce scale as often as needed
Faries, D. E., Yalcin, I., Harder, D., & Heiligenstein, J. H.	Validation of the ADHD rating scale as a clinician administered and scored instrument. (2001).	Assessed the validity and reliability of the ADHD Rating Scale when completed by trained clinicians based on interviews with parents.	-Provides definitions and guidelines for assessing reliability and validity Results indicate that the ADHD-RS has acceptable levels of inter-rater reliability, test-retest reliability, internal consistency, convergent validity, discriminant validity, and responsiveness -Results are comparable to other validated scales for assessing ADHD symptom severity
Frost, M. H., Reeve, B. B., Liepa, A. M., Stauffer, J. W., & Hays, R. D.	What is sufficient evidence for the reliability and validity of patient-reported outcome measures? (2007).	Describes the necessary psychometric properties of patient-reported outcomes, including reliability and validity.	-Defines reliability and internal consistency -For clinical trials, a minimum reliability of .70 is recommended -Sample sizes should include at least 200 cases -Defines validity and subtypes
Goldman, L. S., Genel, M. G., Bezman, R. J., & Slanetz, J.	Diagnosis and treatment of attention-deficit/hyperactivity	Literature review addressing the diagnosis, treatment, and care of ADHD, particularly in regards	-Describes epidemiology, diagnosis, illness/course, and treatment of ADHD -Did not find widespread over-prescription

	disorder in children and adolescents. (1998).	to over-prescription of methylphenidate.	by physicians -Promotes comprehensive assessment of ADHD -Cross-national prevalence rates appear to be similar
Goldstein, S. & Ellison, A. T.	Clinicians' guide to adult ADHD: Assessment and intervention. (2002).	Clinicians' manual presenting review of existing literature, clinical guidelines, and research on the treatment of ADHD.	-Includes overview of adult ADHD and factors affecting its outcome -Provides research on impairments/adaptive functioning, and comorbidities -A chapter also provides information on the practice parameters for the assessment of adult ADHD and making the diagnosis
Greve, K. W., & Bianchini, K. J.	Setting empirical cut-offs on psychometric indicators of negative response bias: A methodological commentary with recommendations. (2004).	Outlines an approach for setting cut-offs on techniques designed to identify the presence of negative response bias.	-Defines sensitivity, specificity, and predictive power -Sensitivity: true positive rate, number of persons with the condition who had a positive test result -Specificity: true negative rate, number of persons without the condition who had a negative test result -Predictive power: index of confidence one can have that an individual test is accurate
Hallowell, E. M., & Ratey, J. J.	Driven to distraction: Recognizing and coping with attention deficit disorder from childhood through adulthood. (1994).	Book geared towards non-professional who has ADHD or who knows someone who does. Touches on childhood ADHD, adult ADHD, and advantages and struggles.	-Published in 1994 and caught the attention of the media and public -Advantages of having ADHD: high energy, intuitiveness, creativity, enthusiasm -Presents case studies and famous people who had ADHD -List of tips for dealing with ADHD in children, a partner, or a family member -Often a recommended read for someone

			diagnosed with ADHD
Hardt, J. & Rutter, M.	Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. (2004).	A computer- and hand-based search to identify studies (between 1980 and 2001) in which there was a quantified assessment of the validity of retrospective recall of sexual abuse, physical abuse, physical/emotional neglect or family discord, using samples of at least 40.	<ul style="list-style-type: none"> -Retrospective reports in adulthood of major adverse experiences in childhood involve a substantial rate of false negatives and measurement error -Findings suggest little weight can be placed on retrospective reports of details of early experiences or on reports of experiences that rely on judgment or interpretation
Hart, E. L., & Lahey, B. B.	General child behavior rating scales. (1999).	An overview of the qualities and uses of rating scales for assessing child behavior problems. Includes a review of some of the most widely used multidimensional scales.	<ul style="list-style-type: none"> -More attention is being paid to the reliability and validity of assessment measures -Rating scales provide rules for obtaining, combining, and interpreting data, and provide a basis for determining whether a subject's behavior is deviant from the norm -Allows data to be collected in a more objective and systematic way -3 most common indices of reliability are: test-retest, inter-rater, and internal consistency -Validity: construct, content, face, and criterion
Helms, J. E., Henze, K. T., Sass, T. L., & Mifsud, V. A.	Treating Cronbach's alpha reliability coefficients as data in counseling research. (2006).	Focusing on Cronbach's alpha internal consistency reliability estimates, the articles defines and provides rationales for reporting, analyzing, interpreting, and using reliability	<ul style="list-style-type: none"> -Describes internal consistency and minimum standards -Cronbach's alpha is the most frequently used procedure for estimating reliability in applied psychology

		data.	
Hinshaw, S. P., & Nigg, J. T.	Behavior rating scales in the assessment of disruptive behavior problems in childhood. (1999).	Discusses conceptual issues pertaining to the use of behavior rating scales as assessment devices, advantages and disadvantages, and psychometric properties on selected ADHD, OD, and CD rating scales.	<ul style="list-style-type: none"> -Definition of ratings: quantified appraisals of behavioral items or domains, made over relatively lengthy time periods -Ratings yield extremely valid portrayals of an individual's dispositions -Advantages of rating scales: utility, ease of administration, quick, limited training time, etc. Disadvantages: halo effects, leniency or severity effects, range restriction, logical errors, etc. -Many scales fail to report ethnic composition of their norming samples -Examples of organization in reviewing scales
Jensen, B. J., & Haynes, S. N.	Self-report questionnaires and inventories. (1986).	Review of using self-report measures in assessment.	-Purpose of rating scales: screening/diagnosis, identifying/quantifying symptoms, alternative behaviors, variables, evaluating treatment
Kalbag, A. S., & Levin, F. R.	Adult ADHD and substance abuse: Diagnostic and treatment issues. (2005).	Reviews the diagnostic assessment issues, prevalence, comorbidity, pharmacotherapy, and psychological interventions in substance-abusing adults with ADHD.	<ul style="list-style-type: none"> -Diagnostic controversies in ADHD and how it relates to diagnosing those with comorbid substance use -Under-diagnosis of ADHD in substance-users -Research review of prevalence of substance use and ADHD -Short review of Brown Attention Deficit Disorder Scales for Adults, Wender Utah Rating Scale, Weinder-Reimherr Adult Attention Deficit Disorder Scale, Connors

			Adult ADHD Rating Scale, Adult Self-Report Scale, and the ADHD Rating Scale-IV
Kaufman, N. L., & Kaufman, A. S.	Review of the Brown Attention-Deficit Disorder Scales. (2001).	Authors reviewed Brown Attention-Deficit Scales (BADDS) in Mental Measurements Yearbook.	<ul style="list-style-type: none"> -Self-report (40 items) -Focus exclusively on inattention criteria -Clusters: (a) organizing and activating for work, (b) sustaining attention and concentration, (c) sustaining energy and effort, (d) managing affective interference, and (e) utilizing “working memory” for accessing recall -4-point Likert-scale -Total raw score (not T-score) that is interpreted -No scoring for collateral informant -The nonclinical samples have higher SES than census data, and manual does not report geographic region or community size -Reviews psychometric properties
Kazdin, A. E.	Preparing and evaluating research reports. (1995).	Discusses preparing reports in light of how information is likely to be evaluated. Focuses on 3 features: description, explanation, and contextualization.	<ul style="list-style-type: none"> -Addresses each section of a research article (abstract, introduction, method, results, discussion) -Discusses interpreting correlations and test validation -Convergent validity: extent to which a measure is correlated with other measures that are designed to assess the same or related constructs -Discriminant validity: no or little relationship exists between 2 measures
Kazdin, A. E.	Methodological issues	Describes methodology and	-Rating scales are used in clinical

	and strategies in clinical research. (2003).	design in research, including assessment of study constructs, bias, and methods of data analysis and interpretation.	assessment -Standardized, reliable, systematic -Using rating scales to guide treatment
Kessler et al.	The US national comorbidity survey replication (NCS-R): Design and field procedures. (2004).	9,282 interviews between February 2001 and April 2003 Ages 18 and older.	-Survey of the prevalence and correlates of mental disorders in the US -Interviews were administered face-to-face -Includes interviewer training and sample design
Kessler, R. C., & Ustun, B.	The world mental health (WMH) survey initiative version of the world health organization (WHO) composite international diagnostic interview (CIDI). (2004).	Discusses the research and development of the survey.	-Screening module and 40 sections -22 sections on diagnoses, 4 on functioning, 2 on treatment, 4 on risk factors, 7 socio-demographic, and 2 methodological factors -Computer-assisted version of the interview is available -Broader areas of assessment, break down critical criteria required in DSM-IV -The 22 diagnostic sections assess mood disorders (2 sections), anxiety disorders (7 sections), substance use (2 sections), childhood disorders (4 sections), and others (7 sections) -Average time 2 hours
Khan, S. K., Dinnes, J., & Kleijnen, J.	Systematic reviews to evaluate diagnostic tests. (2001).	Describes the systematic approach to evaluate the accuracy of diagnostic strategies.	-Evaluation of diagnostic tests includes assessment of reliability and other technical aspects of a test, assessment of diagnostic accuracy, and assessment of diagnostic effectiveness and cost effectiveness
Kitchens, H.	Review of the adult attention deficit	Review of the Adult Attention Deficit Disorders Evaluation	-Three versions: self-report (58 items), home (46 items), and work (54 items)

	disorders evaluation scale. (2001).	Scale (A-ADDES) by McCarney and Anderson.	<ul style="list-style-type: none"> -Approximately 15 minutes for each version -Quantifiers: (0) do not engage in behavior, (1) occurs one to several times per month, (2) occurs one to several times per week, (3) occurs one to several times per day, and (4) occurs one to several times per hour -Raw scores summed and converted to standard scores -Good evidence of reliability: internal consistency, test-retest, and inter-rater -Validity: content and construct -Could be improved by combining the three separate manuals into one
Klein, R. G., & Mannuzza, S.	Long-term outcome of hyperactive children: A review. (1991).	Review from follow-up studies of hyperactive children.	<ul style="list-style-type: none"> -High rates of behavioral problems and cognitive impairment -In adulthood, reports of antisocial personality disorder and substance use disorders -Outcome does not seem to differ between males and females
Knouse, L. E., & Safren, S. A.	Adult attention-deficit hyperactivity disorder. (2010).	Chapter in a book that reviews two of the symptom-based rating scales (the Current Symptoms Scale and the Adult ADHD Self-Report Scale) for screening and tracking treatment progress in adult ADHD. Also, authors describe how they use their scales in research and clinical work.	<ul style="list-style-type: none"> -Provides review, including psychometric information, on the CSS and ASRS -CSS can be used for comprehensive evaluation -ASRS fails to identify a substantial portion (35%) of adults who meet criteria
Mannuzza, S., & Klein,	Long-term prognosis in	Provides summary of controlled,	-Impairments continue into young

R. G.	attention-deficit/hyperactivity disorder. (2000).	follow-up studies of ADHD.	adulthood and adulthood including academic performance, self-esteem, social functioning, substance use, criminality, and comorbidity -2/5 ^{ths} continue to experience symptoms to significant degree
Mannuzza, S., Klein, R. G., & Moulton, J. L.	Persistence of attention-deficit/hyperactivity disorder into adulthood: What have we learned from the prospective follow-up studies? (2003).	Critical review of follow-up studies of children with ADHD to identify factors that influence adult ADHD prevalence estimates.	-Four factors identified that influence adult ADHD prevalence estimates: (1) ascertainment procedure, (2) attrition rates, (3) reporting source, and (4) disorder criteria -Prevalence rates vary significantly -Authors make recommendations (e.g.- interview both subject and parents)
Marks, D. J., Newcorn, J. H., & Halperin, J. M.	Comorbidity in adults with attention-deficit/hyperactivity disorder. (2001).	Describes the clinical manifestations of ADHD in adulthood, with an emphasis on comorbidity.	-Comorbidity with antisocial behavior, substance use disorders, mood disorders, anxiety disorders, and learning disorders -Adults with ADHD exhibit patterns of cognitive deficits, below average grades, increased school dropout, greater likelihood of grade repetition, academic remediation, and lower occupational attainment -Retrospective studies yield higher rates of comorbidity than prospective studies
McGough, J. J., & Barkley, R. A.	Diagnostic controversies in adult attention deficit hyperactivity disorder (2004).	Describes different approaches for assessing ADHD in adults. Review of the Wender Utah criteria, DSM criteria, and laboratory assessment strategies for adult ADHD.	-Both the Wender Utah criteria and DSM-based approaches identify adults with ADHD -Wender Utah criteria established need for retrospective childhood diagnosis and need for differing criteria in adults -Wender Utah failed to identify clients with

			<p>predominantly inattentive symptoms, comorbidities, and diverges from DSM conceptualization</p> <ul style="list-style-type: none"> -DSM criteria has never been validated in adults, and does not include developmentally appropriate symptoms and thresholds for adults
Milich, R., Balentine, A. C., & Lynam, D. R.	ADHD combined type and ADHD predominantly inattentive type are distinct and unrelated disorders. (2001).	Article reviews research suggesting ADHD-inattentive type and ADHD-combined type are separate disorders.	<ul style="list-style-type: none"> -For inattentive subtype symptoms are described as “sluggish, hypoactive, and daydreaming, lost in space” -For combined type, symptoms described as “disinhibited, hyperactive, and distractible” -Combined type more likely to be male, have an earlier age of onset, rejected by peers, and have comorbid externalizing disorders -Inattentive type more likely to be shy, withdrawn, have internalizing disorders, and be less responsive to stimulant medication -Conclude they are “distinct and unrelated” disorders
Montano, B.	Diagnosis and treatment of ADHD in adults in primary care. (2004).	Reviews the obstacles of diagnosing ADHD in adults and the use of rating scales.	<ul style="list-style-type: none"> -Majority of adults also exhibit at least 1 comorbid psychiatric disorder (e.g., anxiety, depression, substance abuse, etc.) -Establish early and persistent history of inattention or hyperactivity -Suggests using standardized ADHD rating scales and checklists to aid in diagnosis
Morgan, G. A., Gliner, J. A., & Harmon, R. J.	Understanding and evaluating research in applied clinical settings.	Book geared for professionals on how to analyze and evaluate research articles.	<ul style="list-style-type: none"> -How research approach and design determine appropriate statistical analysis -Reviews reliability and validity

	(2006).		
Muniz, L.	Test review: Brown attention-deficit disorder scales and Brown ADD diagnostic forms. (1996).	A review of the BADDSS manual and scales.	<ul style="list-style-type: none"> -Author: Thomas E. Brown -Publisher: Psychological Corporation, 1996 -Adolescents (12-18 years) and Adults (18+) -Purpose: “tap for a range of symptoms beyond the ‘inattention’ criteria for ADHD in the DSM-IV” (Brown, p. 1) -Recommended uses: screening, part of a comprehensive assessment, and to monitor treatment effectiveness -40 self-report items -5 clusters: (1) organizing and activating to work, (2) sustaining attention and concentration, (3) sustaining energy and effort, (4) managing affective interference, and (5) utilizing “working memory” and accessing recall -Reviews reliability and validity from manual -Normative sample low for African Americans and Hispanics; includes no Asians or Native Americans -No content or criterion validity -Concurrent validity limited
Murphy, K. R., & Adler, L. A.	Assessing attention-deficit/hyperactivity disorder in adults: Focus on rating scales. (2004).	Review of adult ADHD, including various adult rating scales available for use.	<p>Reviews:</p> <ul style="list-style-type: none"> -Conners’ Adult ADHD Rating Scale -Brown Attention-Deficit Disorder Scale for Adults -Wender Utah Rating Scale -ADHD Rating Scale and ADHD Rating

			<p>Scale-IV</p> <ul style="list-style-type: none"> -Current Symptoms Scale -Adult ADHD Self-Report Scale v1.1. Symptom Checklist
Murphy, K. R., & LeVert, S.	Out of the fog: Treatment options and coping strategies for adult attention deficit disorder. (1995).	Lay book for adults with ADHD. Addresses the adult persistence of ADHD, diagnosis, treatment, and strategies,	<ul style="list-style-type: none"> -Published in 1995 after research concluding ADHD is not “grown out of” and persists into adulthood for many -Focuses on adult ADHD -Written for a lay audience and includes self-exploration exercises -Provides lists for simplifying and improving life for the adult with ADHD (e.g., time management and organizational skills)
Murray, C., & Weiss, M.	Assessment of adult ADH: Current guidelines and issues. (2001).	Describes standard assessment procedures for ADHD in adults. Similarities and differences among childhood and adult ADHD symptoms, persistence into adulthood, the use of the DSM-IV criteria, retrospective diagnosis, and the use of clinical interviews.	<ul style="list-style-type: none"> -Several studies changed the view of ADHD as a childhood-only disorder -ADHD persists into adulthood -Assessment includes: medical evaluation, rating scales, clinical interviews, and comorbid/differential diagnoses -Concerns/limitations of assessment criteria: DSM-IV symptom content, cutoff scores, age of onset, and self-reports
National Institutes of Health.	Diagnosis and treatment of attention deficit hyperactivity disorder: NIH consensus statement. (1998).	Scientific evidence to support ADHD as a disorder, impact of ADHD, and effective treatments.	-Website provides booklet on ADHD, including symptoms in adults, diagnosis, and treatment
National Resource Center on ADHD: A	Diagnosis of AD/HD in adults. (2003).	Website provides science-based information about ADHD	-Diagnosis of ADHD in adults (WWK9), including symptoms experienced in adults

program of CHADD.		including: a review of ADHD, diagnosis, treatment, dealing with systems, educational issues, and living with ADHD.	-What to expect from an evaluation -AACAP practice parameters
NCSSM Statistics Leadership Institute.	Categorical data analysis. (1999).	Website providing information that reviews techniques for analyzing categorical data.	-Describes TCA, sensitivity, and specificity
Reed, J. C.	Review of the Adult Attention Deficit Disorders Evaluation Scale. (2001).	Review of the Adult Attention Deficit Disorders Evaluation Scale (A-ADDES) by McCarney and Anderson from Mental Measurements Yearbook and Tests in Print.	-Three versions: self-report (58 items), home (46 items), and work (54 items) -Approximately 15 minutes for each version -Quantifiers: (0) do not engage in behavior, (1) occurs one to several times per month, (2) occurs one to several times per week, (3) occurs one to several times per day, and (4) occurs one to several times per hour -Raw scores summed and converted to standard scores -Good evidence of reliability: internal consistency, test-retest, and inter-rater -Validity: content and construct -Could be improved by combining the three separate manuals into one
Rosler, M., Retz, W., & Stieglitz, R. D.	Parameters in adult ADHD treatment investigations-benchmarking instruments for international multicenter trials. (2010).	Review of rating scales used in clinical studies to detect the effects of pharmacological and/or psychotherapeutic treatments. Compared the psychometric properties from a medline search since 1999 in adult ADHD.	-Identified 21 pharmacological and 6 psychotherapeutic treatment studies -ADHD-RS-IV, CAARS-O, & the WRAADDS were the most used scales -CAARS-S & ASRS generally accepted -Instruments offer appropriate psychometric properties
Rosler et al.	Psychopathological	Discusses the diagnostic	-Identifies and describes rating scales

	rating scales for diagnostic use in adults with attention-deficit/hyperactivity disorder (ADHD). (2006).	procedure in assessing adult ADHD including childhood symptoms, diagnostic criteria, functional impairment, and comorbidity. Reviews both diagnostic interviews and rating scales that aid in assessing for adult ADHD.	including CAARS, Current Symptoms Scale, Brown ADD Rating Scale, Adult Self-Report Scale, ADHD-RS-IV, and SDHD-SB + ADHD-DC -CAARS measures emotional lability and self-concept problems -Brown ADD-RS contains scores for organizing and activating for work, sustaining energy and effort, and managing affect -Ratings scales are cost-effective and useful tool for assessing ADHD -Does not describe each scale in appropriate detail -Does not report statistics (e.g., reliability/validity) -Muddled by other information (e.g., scales for diagnostic interviews and comorbid disorders)
Ryan, J. J., Lopez, S. J., & Sumerall, S. W.	Understanding test construction. (2001).	Chapter focusing on test construction and item selection. Reviews empirical issues pertaining to validity and reliability, test norms, scores, and interpretation.	-Provides definitions of reliability and validity, including minimum standards for assessment
Searight, H. R., Burke, J. M., & Rottnek, F.	Adult ADHD: Evaluation and treatment in medicine. (2000).	A review of adult ADHD published by the American Academy of Family Physicians.	-Includes diagnostic criteria, symptoms, evaluation (including using self-report scales), differential diagnosis, pharmacotherapy, and self-management strategies
Shultz, K. S. & Whitney,	Measurement theory in	Book explaining measurement	- Chapters include introduction and

D. J.	action: Case studies and exercises. (2005).	theory including concepts, statistics, validity.	overview, statistics review for psychological measurement, psychological scaling, test preparation and specification, reliability, validity, and test bias, content validation, criterion-related validation, construct validation, validity, and test bias
Silverman, W. K., & Rabian, B.	Rating scales for anxiety and mood disorders. (1999).	A review of rating scales for children and adolescents, focused on rating scales that obtain subjective self-ratings about anxious and depressed moods.	-Lists reasons to use rating scales -Departures from the norm can usually be determined based on standard deviation units from the sample -Example of how to organize section on reviewing rating scales
Smart, A.	A multi-dimensional model of clinical utility. (2006).	Addresses term of “clinical utility” and its lack of definition in research.	-Clinical utility common synonym for clinical effectiveness and/or economic evaluations -Identified Polgar et al. (2005) article that evaluated clinical utility of an assessment scale (ease of use, time, training and qualifications, format, interpretation, and meaning and relevance of information obtained) -Smart introduces a multi-dimensional model that outlines four factors: appropriateness, accessibility, practicability, and acceptability -Appropriate: effective and relevant -Accessible: resources implications and procurement -Practicable: functional, suitable, and training or knowledge -Acceptable: to clinician, to clients, to

			society
Sparrow, E. P.	Essentials of Conners behavior assessments. (2010).	Provides a comprehensive guide for professionals to understand and apply results from the various Conners assessments.	-Describes administration, scoring, interpretation, strengths/weaknesses, and clinical applications of Conners assessments -Provides information on overall correct classification rate, sensitivity, and specificity -70-79% good, 80-89% very good, 90% or higher excellent
Spencer, T. J.	ADHD treatment across the life cycle. (2004).	Provides a review of pharmacological treatment in ADHD.	-Similar pharmacological treatments used on children are showing positive results in adults as well
Spencer, T., Biederman, J., Wilens, T., & Faraone, S. V.	Is attention-deficit hyperactivity disorder in adults a valid disorder? (1994).	Conducted a systematic search of psychiatric and psychological literature for empirical studies on adult ADHD. Reported descriptive, predictive, and concurrent validity.	-Evidence supporting ADHD in adults as a valid disorder -Research shows evidence of comorbidity (antisocial, depressive, and anxiety disorders) and impairments in adults with ADHD, like their child counterparts -Authors include in their discussion a section on the controversies that surround the diagnosis of adult ADHD
Spiliotopoulou, G.	Reliability reconsidered: Cronbach's alpha and pediatric assessment in occupational therapy. (2009).	Reviewed previously published papers reporting on internal consistency issues and outcome measures.	- Although Cronbach's alpha is the most widely used coefficient for internal consistency, there are differences in its use and interpretation -Low coefficient may not always indicate problems with construct and large sizes do not always suggest adequate reliability -Definition and explanation of reliability and internal consistency
Stefanatos, G. A., &	Attention-	Reviews historical evolution of	-Addresses gender differences and other

Baron, I. S.	deficit/hyperactivity disorder: A neuropsychological perspective towards DSM-V. (2007).	ADHD, prevalence, and DSM-IV criteria for diagnosis.	associated cultural, familial, and socio-environmental influences -Obstacles encountered in clinical practice: comorbidities, problems with DSM-IV criteria, subtype differentiation
Streiner, D. L.	A checklist for evaluating the usefulness of rating scales. (1993).	Article provides a guide to evaluating scales, including different types of reliability and validity, as well as usefulness, completion time, training, and scoring ease.	-Reviews reliability (internal consistency, test-retest, & inter-rater) and validity (face, content, criterion, and construct) -Provides minimum standards for evaluating reliability and validity of scales -Utility: completion time, training time, and scoring
Taylor, A., Deb, S., & Unwin, G.	Scales for the identification of adults with attention deficit hyperactivity disorder (ADHD): A systematic review. (2011).	Describes the properties, including psychometric statistics, of scales used to identify ADHD.	-Identified 35 validation studies and 14 separate scales used for identifying adult ADHD -Majority of studies were of poor quality and reported insufficient detail -CAARS and WURS (short version) had the best psychometric properties -More research into these scales is needed
Tercyak, K. P., Peshkin, B. N., Walker, L. R., Stein, M. A.	Cigarette smoking among youth with attention-deficit/hyperactivity disorder: Clinical phenomenology, comorbidity, and genetics. (2002).	Reviewed factors in relation to smoking and ADHD.	-Prevalence of smoking among ADHD adolescents is nearly twice as high at adolescents without ADHD -Social and behavioral factors -Biological factors (physiological effects of nicotine on attention and role of dopamine in smoking and attention)
Trochim, W. M. K., & Donnelly, J. P.	Research methods knowledge base (3 rd ed.). (2008).	Book that provides coverage of quantitative and qualitative methods.	-Describes concepts of validity and reliability -Construct validity: degree to which

			<p>inferences can be made</p> <ul style="list-style-type: none"> -Predictive validity: measure is able to predict what it should -Concurrent validity: able to distinguish between groups -Face validity: seems like a good translation of the construct
Tyron, W. W., & Bernstein, D.	Understanding measurement. (2003).	Chapter in the book Understanding Research in Clinical and Counseling Psychology.	-Reviews measurement including reliability and validity
Wallis, C.	Life in overdrive. (1994).	Overview and implications of ADHD. Highlights growing awareness of the disorder and how it impacts the individual/families.	-Published in 1994 bringing media and public attention to ADHD
Weiss, G. & Hechtman, L. T.	Hyperactive children grown up: ADHD in children, adolescents, and adults (2 nd ed.). (1993).	Book that summarizes developments in ADHD including a section on adulthood with information on adult hyperactive psychiatric status, drug/alcohol use, occupational status, self-esteem and social functioning, and assessment/diagnostic issues.	<ul style="list-style-type: none"> -Symptoms persist into adulthood -Documents significant risk for hyperactive subtype including information from controlled, long-term studies -Discusses diagnostic issues in assessing adults
Weiss, M. D., & Weiss, J. R.	A guide to the treatment of adults with ADHD. (2004).	To provide physicians clinical suggestions about the treatment of ADHD in adults and how the presentation differs from childhood ADHD.	<ul style="list-style-type: none"> -Describes symptoms adults with ADHD may present with, including difficulties at work and in social settings -Prevalence between men and women is almost equal -Tools available for physicians to help with

			<p>diagnosis: developmental history, getting parent information, making a differential diagnosis, associated symptoms, etc.</p> <ul style="list-style-type: none"> -Lists possible impairments and bibliotherapy aids for adults with ADHD -Suggest medication trial, restructuring patient's environment, and psychological treatment
Wender, P. H.	Attention-deficit hyperactivity disorder in adults. (1995).	Chapters include signs and symptoms, prevalence in adults, etiology, diagnosis, and treatment. Appendixes include evaluation measures and rating scales.	<ul style="list-style-type: none"> -ADHD is a commonly genetically transmitted disorder -Impact of ADHD on marital discord and academic failure -Evidence for medication treatments and psychosocial treatment
Wender, P. H.	ADHD: Attention-deficit hyperactivity disorder in children and adults. (2000).	Reviews information known about childhood ADHD and expands to include recent research that has been made in regards to adult ADHD. Majority of chapters geared towards children with ADHD (characteristics, causes, development, and treatment), with one chapter on adult ADHD.	<ul style="list-style-type: none"> -DSM criteria may not be suitable for adults -ADHD in adults valid diagnosis -Describes symptoms seen in adults
Wolf, L. E., & Wasserstein, J.	Adult ADHD: Concluding thoughts. (2001).	Raises questions and issues for future research on ADHD in adults.	<ul style="list-style-type: none"> -Links core complaints in adults to deficits of hyperactivity, inattention, and impulsivity -Patterns of comorbidity and symptom heterogeneity pose new conceptual, diagnostic, and treatment challenges

REFERENCES

- Able, S. L., Johnston, J. A., Adler, L. A., & Swindle, R. W. (2007). Functional and psychosocial impairment in adults with undiagnosed ADHD. *Psychological Medicine, 37*, 97-107. doi:10.1017/S0033291706008713
- Achenbach, T. M. (1991a). *Manual for the Child Behavior Checklist/ 4-18 and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T. M. (1991b). *Manual for the Teacher's Report Form and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T. M. (1991c). *Manual for the Youth Self-Report and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T. M., Krukowski, R. A., Dumenci, L., & Ivanova, M. Y. (2005). Assessment of adult psychopathology: Meta-analyses and implications of cross-informant correlations. *Psychological Bulletin, 131*(3), 361-382. doi:10.1037/0033-2909.131.3.361
- Adler, L. A. (2004). Clinical presentations of adult patients with ADHD. *Journal of Clinical Psychiatry, 65*(3), 8-11. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15046529>
- Adler, L., & Cohen, J. (2004). Diagnosis and evaluation of adults with attention deficit/hyperactivity disorder. *Psychiatry Clinics of North America, 27*, 187-201. doi:10.1016/j.psc.2003.12.003
- Adler, L. A., Faraone, S. V., Spencer, T. J., Michelson, D., Reimherr, F. W., Glatt, S. J., . . . Biederman, J. (2008). The reliability and validity of self- and investigator ratings of ADHD in adults. *Journal of Attention Disorders, 11*(6), 711-719. doi:10.1177/1087054707308503

- Adler, L., Kessler, R., & Spencer, T. (2003). *Adult Self Report Scale, ASRS – v1.1 Screener*. World Health Organization, New York.
- Adler, L. A., Spencer, T., Brown, T. E., Holdnack, J., Saylor, K., Schuh, K., . . . Kelsey, D. (2009). Once-daily atomoxetine for adult attention-deficit/hyperactivity disorder: A 6-month, double-blind trial. *Journal of Clinical Psychopharmacology*, 29(1), 44-50. doi:10.1097/JCP.0b013e318192e4a0
- Adler, L. A., Spencer, T., Faraone, S. V., Kessler, R. C., Howes, M. J., Biederman, J., & Secnik, K. (2006). Validity of pilot Adult ADHD Self-Report Scale (ASRS) to rate adult ADHD symptoms. *Annals of Clinical Psychiatry*, 18(3), 145-148. doi:10.1080/10401230600801077
- American Academy of Child and Adolescent Psychiatry. (2007). Practice parameter for the assessment and treatment of children and adolescents with attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46(7), 894-921. doi:10.1097/chi.0b013e318054e724
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: Text revision* (4th ed.). Washington, DC: Author.
- American Psychiatric Association. (2012). *American Psychiatric Association: DSM-5 development*. Retrieved from <http://www.dsm5.org>
- Applegate, B., Lahey, B. B., Hart, E. L., Biederman, J., Hynd, G. W., Barkley, R.A., . . . Shaffer, D. (1997). Validity of the age-of-onset criterion for ADHD: A report from the DSM-IV field trials. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36(9), 1211-1221. doi:10.1097/00004583-19970900000013

- Babinski, L. M., Hartsough, C. S., & Lambert, N. M. (1999). Childhood conduct problems, hyperactivity-impulsivity, and inattention as predictors of adult criminal activity. *Journal of Child Psychology and Psychiatry*, *40*(3), 347-355. doi:10.1111/1469-7610.00452
- Barkley, R. A. (1988). Child behavior rating scales and checklists. In M. Rutter, A. H. Tuma, & I. S. Lann (Eds.), *Assessment and diagnosis in child psychopathology* (pp. 113-155). New York, NY: Guilford Press.
- Barkley, R. A. (1998). *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment*. New York, NY: Guildford Press.
- Barkley, R. A. (2011). *Barkley Adult ADHD Rating Scale- IV*. New York, NY: Guildford Press.
- Barkley, R. A., Cook, E. H., Dulcan, M., Campbell, S., Prior, M., Atkins, M., . . . Lewandowski, L. (2002). Consensus statement on ADHD. *European Child and Adolescent Psychiatry*, *11*, 96-98. doi:10.1097/00004583-200212000-00001
- Barkley, R. A., & Cox, D. (2007). A review of driving risks and impairments associated with attention-deficit/hyperactivity disorder and the effects of stimulant medication on driving performance. *Journal of Safety Research*, *38*, 113-128. doi:10.1016/j.jsr.2006.09.004
- Barkley, R. A., DuPaul, G. J., & McMurray, M. B. (1990). Comprehensive evaluation of attention deficit disorder with and without hyperactivity as defined by research criteria. *Journal of Consulting and Clinical Psychology*, *58*(6), 775-789. doi:10.1037/0022-006X.58.6.775

- Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K. (2002). The persistence of attention-deficit/hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. *Journal of Abnormal Psychology, 111*(2), 279-289. doi:10.1037//0021-843X.111.2.279
- Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K. (2004). Young adult follow-up of hyperactive children: Antisocial activities and drug use. *Journal of Child Psychology and Psychiatry, 45*(2), 195-211. doi:10.1111/j.1469-7610.2004.00214.x
- Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K. (2006). Young adult outcome of hyperactive children: Adaptive functioning in major life activities. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*(2), 192-202. doi:10.1097/01.chi.0000189134.97436.e2
- Barkley, R. A., Knouse, L. E., & Murphy, K. R. (2011). Correspondence and disparity in the self- and other ratings of current and childhood ADHD symptoms and impairment in adults with ADHD. *Psychological Assessment, 23*(2), 437-446. doi:10.1037/a0022172
- Barkley, R. A., & Murphy, K. R. (1998). *Attention-deficit hyperactivity disorder: A clinical workbook (2nd ed.)*. New York, NY: Guilford Press.
- Barkley, R., Murphy, K. R., & Fischer, M. (2008). *ADHD in adults: What the science says*. New York, NY: Guilford Press.
- Barkley, R. A., Murphy, K., & Kwasnik, D. (1996). Psychological adjustment and adaptive impairments in young adults with ADHD. *Journal of Attention Disorders, 1*(1), 41-54. doi:10.1177/108705479600100104

- Belendiuk, K. A., Clarke, T. L., Chronis, A. M., & Raggi, V. L. (2007). Assessing the concordance of measures used to diagnose adult ADHD. *Journal of Attention Disorders, 10*(3), 276-287. doi:10.1177/1087054706289941
- Biederman, J. (2004). Impact of comorbidity in adults with attention-deficit/hyperactivity disorder. *Journal of Clinical Psychiatry, 65*(Suppl. 3), 3-7. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15046528>
- Biederman, J., Faraone, S. V., Spencer, T., Wilens, T., Mick, E., & Lapey, K. A. (1994). Gender differences in a sample of adults with attention deficit hyperactivity disorder. *Psychiatry Research, 53*(1), 13-29.
doi: [http://dx.doi.org/10.1016/0165-1781\(94\)90092-2](http://dx.doi.org/10.1016/0165-1781(94)90092-2)
- Biederman, J., Faraone, S. V., Spencer, T., Wilens, T., Norman, D., Lapey, K. A., . . . Doyle, A. (1993). Patterns of psychiatric comorbidity, cognition, and psychosocial functioning in adults with attention deficit hyperactivity disorder. *The American Journal of Psychiatry, 150*(12), 1792-1798. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/8238632>
- Biederman, J., Mick, E., Fried, R., Wilner, N., Spencer, T. J., & Faraone, S. V. (2011). Are stimulants effective in the treatment of executive function deficits? Results from a randomized double blind study of OROS-methylphenidate in adults with ADHD. *European Neuropsychopharmacology, 21*, 508-515.
doi:10.1016/j.euroneuro.2010.11.005
- Biederman, J., Mick, E., Spencer, T., Surman, C., Hammerness, P., Doyle, R., . . . Schweitzer, K. (2006). An open-label trial of OROS methylphenidate in adults

- with late-onset ADHD. *CNS Spectrums*, *11*(5), 390-396. Retrieved from <http://www.cnsspectrums.com/asp/articleDetail.aspx?articleid=402>
- Biederman, J., Mick, E., Surman, C., Doyle, R., Hammerness, P., Harpold, T., . . . Spencer, T. (2007a). A randomized, placebo-controlled trial of OROS methylphenidate in adults with attention-deficit/hyperactivity disorder. *Biological Psychiatry*, *61*(12), 1402. doi:10.1016/j.biopsych.2007.05.009
- Biederman, J., Mick, E., Surman, C., Doyle, R., Hammerness, P., Michel, E., . . . Spencer, T. (2007b). Comparative acute efficacy and tolerability of OROS and immediate release formulations of methylphenidate in the treatment of adults with attention-deficit/hyperactivity disorder. *BMC Psychiatry*, *7*, 49-46. doi:10.1186/1471-244X-7-49
- Biederman, J., Monuteaux, M. C., Mick, E., Spencer, T., Wilens, T. E., Silva, J. M., . . . Faraone, S.V. (2006). Young adult outcome of attention deficit hyperactivity disorder: A controlled 10-year follow-up study. *Psychological Medicine*, *36*, 167-179. doi:10.1017/S0033291705006410
- Brown, T. E. (1995). Differential diagnosis of ADD versus ADHD in adults. In K. G. Nadeau (Ed.), *A comprehensive guide to attention deficit disorder in adults: Research, diagnosis, and treatment* (pp. 93-108). Philadelphia, PA: Brunner/Mazel.
- Brown, T. E. (1996). *Brown Attention-Deficit Disorder Scales for Adolescents and Adults*. San Antonio, TX: The Psychological Corporation.
- Carlson, C. L., & Mann, M. (2002). Sluggish cognitive tempo predicts a different pattern of impairment in the attention deficit hyperactivity disorder, predominantly

- inattentive type. *Journal of Clinical Child and Adolescent Psychology*, 31(1), 123-129. doi:10.1207/S15374424JCCP3101_14
- Cicchetti, D. V. (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment*, 6(4), 284-290. doi:10.1037/1040-3590.6.4.284
- Cicchetti, D. V., & Sparrow, S. S. (1990). Assessment of adaptive behavior in young children. In J. H. Johnson & J. Goldman (Eds.), *Developmental assessment in child clinical psychology: A handbook* (pp. 173-196). Elmsford, NY: Pergamon Press.
- Cleland, C., Magura, S., Foote, J., Rosenblum, A., & Kosanke, N. (2006). Factor structure of the Conners Adult ADHD Rating Scale (CAARS) for substance users. *Addictive Behaviors*, 31(7), 1277-1282. doi:10.1016/j.addbeh.2005.08.014
- Collett, B. R., Ohan, J. L., & Myers, K. M. (2003). Ten-year review of rating scales. V: Scales assessing attention-deficit/hyperactivity disorder. *Journal of the American Academy of Child & Adolescent Psychiatry*, 42(9), 1015-1037. doi:10.1097/01.CHI.0000070245.24125.B6
- Conners, C. K., Erhardt, D., & Sparrow, E. (1999). *CAARS Adult ADHD Rating Scales: Technical manual*. New York, NY: Multi-Health Systems Inc.
- Conners, C. K., & Jett, J. L. (1999). *Attention deficit hyperactivity disorder (in adults and children): The latest assessment and treatment strategies*. Kansas City, MO: Compact Clinicals.
- Conners, C. K., Sitarenios, G., Parker, J. D. A., & Epstein, J. N. (1998a). The revised Conners' Parent Rating Scale (CPRS-R): Factor structure, reliability, and criterion

validity. *Journal of Abnormal Psychology*, 26(4), 257-268.

doi:10.1023/A:1022602400621

Conners, C. K., Sitarenios, G., Parker, J. D. A., & Epstein, J. N. (1998b). Revision and re-standardization of the Conners Teacher Rating Scale (CTRS-R): Factor structure, reliability, and criterion validity. *Journal of Abnormal Psychology*, 26, 279-291. doi:10.1023/A:1022606501530

Conners, C. K., Sparrow, E., & Erhardt, D. (2004). *Conners Adult ADHD Rating Scales: Correctional Settings*. New York, NY: Multi-Health Systems Inc.

Davidson, M. A. (2008). Literature review: ADHD in adults: A review of the literature. *Journal of Attention Disorders*, 11(6), 628-641. doi: 10.1177/1087054707310878

De Quiros, G. B., & Kinsbourne, M. (2001). Adult ADHD: Analysis of self-ratings on a behavior questionnaire. In J. Wasserstein, L. E. Wolf, & F. F. LeFever (Eds.), *Adult attention deficit disorder: Brain mechanisms and life outcomes* (pp. 140-147). New York, NY: New York Academy of Sciences.

DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd ed.). Thousand Oaks, CA: Sage.

DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D.M., Hayden, S.J., Lazzara, D. J., . . . Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship*, 39(2), 155-164.

doi:10.1111/j.1547-5069.2007.00161.x

Deyo, R. A., Diehr, P., & Patrick, D. L. (1991). Reproducibility and responsiveness of health status measures statistics and strategies for evaluation. *Controlled Clinical Trials*, 12(4), S142-S158. doi:http://dx.doi.org/10.1016/S0197-2456(05)80019-4

- Diamond, A. (2005). Attention-deficit disorder (attention-deficit/hyperactivity disorder without hyperactivity): A neurobiologically and behaviorally distinct disorder from attention/deficit/hyperactivity disorder (with hyperactivity). *Developmental Psychology, 17*(3), 807-825. doi:10.1017/S0954579405050388
- DuPaul, G. J., Anastopoulos, A. D., Power, T. J., Reid, R., Ikeda, M. J., & McGooey, K. E. (1998). Parent ratings of attention-deficit/hyperactivity disorder symptoms: Factor structure and normative data. *Journal of Psychopathology and Behavioral Assessment, 20*, 83-102. doi:10.1023/A:1023087410712
- DuPaul, G. J., Power, T. J., Anastopoulos, A. D., & Reid, R. (1998). *ADHD rating scale-IV: Checklists, norms, and clinical interpretation*. New York, NY: Guilford Press.
- Epstein, J. N., Conners, C. K., Sitarenios, G., & Erhardt, D. (1998). Continuous performance test results of adults with attention deficit hyperactivity disorder. *The Clinical Neuropsychologist, 12*(2), 155-168. doi:10.1076/clin.12.2.155.2000
- Erhardt, D., Epstein, J. N., Conners, C. K., Parker, J. D. A., & Sitarenios, G. (1999). Self-ratings of ADHD symptoms in adults II: Reliability, validity, and diagnostic sensitivity. *Journal of Attention Disorders, 3*(3), 153-158.
doi:10.1177/108705479900300304
- Faraone, S. V., & Biederman, J. (2005). What is the prevalence of adult ADHD: Results of a population screen of 966 adults. *Journal of Attention Disorders, 9*(2), 384-391. doi:10.1177/1087054705281478
- Faraone, S. V., Biederman, J., Feighner, J. A., & Monuteaux, M. C. (2000). Assessing symptoms of attention deficit hyperactivity disorder in children and adults: Which

is more valid? *Journal of Consulting and Clinical Psychology*, 68(5), 830-842.

doi:10.1037//0022-006X.68.5.830

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 subthreshold diagnoses valid? *American Journal of*

Psychiatry, 163(10), 1720-1729. doi:10.1176/appi.ajp.163.10.1720

Faries, D. E., Yalcin, I., Harder, D., & Heiligenstein, J. H. (2001). Validation of the

ADHD rating scale as a clinician administered and scored instrument. *Journal of*

Attention Disorders, 5(2), 107-115. doi:10.1177/108705470100500204

Fayyad, J., Graaf, R. D., Kessler, R., Alonso, J., Angermeyer, M., Demyttenaere, K., . . .

Jin, R. (2007). Cross-national prevalence and correlates of adult attention-deficit

hyperactivity disorder. *The British Journal of Psychiatry*, 190, 402-409.

doi: 10.1192/bjp.bp.106.034389

Fischer, M., & Barkley, R.A. (2006). Young adult outcomes of children with

hyperactivity: Leisure, financial, and social activities. *International Journal of*

Disability, 53(2), 229-245. doi:10.1080/10349120600716182

Fischer, M., Barkley, R. A., Edelbrock, C. S., & Smallish, L. (1990). The adolescent

outcomes of hyperactive children diagnosed by research criteria: Academic,

attentional, and neuropsychological status. *Journal of Consulting and Clinical*

Psychology, 58(5), 580-588. doi:10.1037/0022-006X.58.5.580

Fischer, M., Barkley, R. A., Smallish, L., & Fletcher, K. (2002). Young adult follow-up

of hyperactive children: Self-reported psychiatric disorders, comorbidity, and the

- role of childhood conduct problems and teen CD. *Journal of Abnormal Child Psychology*, 30(5), 463-475. doi:10.1023/A:1019864813776
- Flory, K., Molina, B. S. G., Pelham, W. E., Gnagy, E., & Smith, B. (2006). Childhood ADHD predicts risky sexual behavior in young adulthood. *Journal of Clinical Child and Adolescent Psychiatry*, 35(4), 571-577.
doi:10.1207/s15374424jccp3504_8
- Fried, R., Petty, C. R., Surman, C. B., Reimer, B., Aleardi, M., Martin, J. M., . . . Biederman, J. (2006). Characterizing impaired driving in adults with attention-deficit/hyperactivity disorder: A controlled study. *Journal of Clinical Psychiatry*, 67(4), 567-574. doi:10.4088/JCP.v67n0407
- Frost, M. H., Reeve, B. B., Liepa, A. M., Stauffer, J. W., & Hays, R. D. (2007). What is sufficient evidence for the reliability and validity of patient-reported outcome measures? *International Society for Pharmacoeconomics and Outcomes Research*, 10 (Suppl. 2), S94-S105. doi:10.1111/j.1524-4733.2007.00272.x
- Garner, A. A., Marceaux, J. C., Mrug, S., Patterson, C., & Hodgens, B. (2010). Dimensions and correlates of attention deficit/hyperactivity disorder and sluggish cognitive tempo. *Journal of Abnormal Child Psychology*, 38(8), 1097-1107.
doi:10.1007/s10802-010-9436-8
- Goldman, L. S., Genel, M., Bezman, R. J., & Slanetz, P. J. (1998). Diagnosis and treatment of attention-deficit/hyperactivity disorder in children and adolescents. *Journal of the American Medical Association*, 279(14), 1100-1107.
doi:10.1001/jama.279.14.1100

- Goldstein, S., & Ellison, A. T. (2002). *Clinicians' guide to adult ADHD: Assessment and intervention*. San Diego, CA: Academic Press.
- Greve, K. W., & Bianchini, K. J. (2004). Setting empirical cut-offs on psychometric indicators of negative response bias: A methodological commentary with recommendations. *Archives of Clinical Neuropsychology, 19*, 533-541.
doi:10.1016/j.acn.2003.08.002
- Gudjonsson, G. H., Sigurdsson, J. F., Gudmundsdottir, H. B., Sigurjonsdottir, S., & Smari, J. (2010). The relationship between ADHD symptoms in college students and core components of maladaptive personality. *Personality and Individual Differences, 48*, 601-606. doi:10.1016/j.paid.2009.12.015
- Hallowell, E., & Ratey, J. (1994). *Driven to Distraction*. New York, NY: Pantheon.
- Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Child Psychology and Psychiatry, 45*(2), 260-273. doi:10.1111/j.1469-7610.2004.00218.x
- Hart, E. L., & Lahey, B. B. (1999). General child behavior rating scales. In D. Shaffer, C. P. Lucas, & J. E. Richters (Eds.), *Diagnostic assessment in child and adolescent psychiatry* (pp. 65-87). New York, NY: The Guildford Press.
- Hart, E. L., Lahey, B. B., Loeber, R., Applegate, B., Green, S. M., & Frick, P. J. (1995). Developmental changes in attention-deficit hyperactivity disorder in boys: A four-year longitudinal study. *Journal of Abnormal Child Psychology, 23*(6), 729-749.
doi:10.1007/BF01447474

- Helms, J. E., Henze, K. T., Sass, T. L., & Mifsud, V. A. (2006). Treating Cronbach's alpha reliability coefficients as data in counseling research. *The Counseling Psychologist, 34*(5), 630-660. doi:10.1177/0011000006288308
- Hill, B. D., Pella, R. D., Singh, A. N., Jones, G. N., & Gouvier, W. D. (2009). The Wender Utah Rating Scale: Adult ADHD diagnostic tool or personality index? *Journal of Attention Disorders, 13*(1), 87-94. doi:10.1177/1087054708320384
- Hinshaw, S. P., & Nigg, J. T. (1999). Behavior rating scales in the assessment of disruptive behavior problems in childhood. In D. Shaffer, C. P. Lucas, & J. E. Richters (Eds.), *Diagnostic assessment in child and adolescent psychiatry* (pp. 91-126). New York, NY: The Guildford Press.
- Jachimowicz, G., & Geiselman, R. E. (2004). Comparison of ease of falsification of attention deficit hyperactivity disorder diagnosis using standard behavioral rating scales. *Cognitive Science Online, 2*, 6-20. Retrieved from <http://cogsci-online.ucsd.edu>
- Jensen, B. J., & Haynes, S. N. (1986). Self-report questionnaires and inventories. In A. R. Ciminero, K. S. Calhoun, & H. E. Adams (Eds.), *Handbook of behavioral assessment* (pp. 150-175). New York, NY: Wiley.
- Kalbag, A. S., & Levin, F. R. (2005). Adult ADHD and substance abuse: Diagnostic and treatment issues. *Substance Use & Misuse, 40*, 1955-1981. doi:10.1080/10826080500294858
- Kaufman, N. L., & Kaufman, A. S. (2001). [Review of the test Brown Attention-Deficit Disorder Scales]. In *The fourteenth mental measurements yearbook*. Available from <http://www.unl.edu/buros/>

- Kazdin, A. E. (1995). Preparing and evaluating research reports. *Psychological Assessment*, 7(3), 228-237. doi:10.1037/1040-3590.7.3.228
- Kazdin, A. E. (2003). *Methodological issues and strategies in clinical research*. Washington, DC: American Psychological Association.
- Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., . . . Walters, E. (2005). The World Health Organization adult ADHD self-report scale (ASRS): A short screening scale for use in the general population. *Psychological Medicine*, 35, 245-256. doi:10.1017/S0033291704002892
- Kessler, R. C., Adler, L. A., Barkley, R., Biederman, J., Conners, C. K., Demler, O., . . . Zaslavsky, A. M. (2006). The prevalence and correlates of adult ADHD in the United States: Results from the national comorbidity survey replication. *American Journal of Psychiatry*, 163(4), 716-723. doi:10.1176/appi.ajp.163.4.716
- Kessler, R. C., Adler, L. A., Barkley, R., Biederman, J., Conners, C. K., Faraone, S. V., . . . Zaslavsky, A.M. (2005). Patterns and predictors of attention deficit/hyperactivity disorder persistence into adulthood: Results from the national comorbidity survey replication. *Society of Biological Psychiatry*, 57, 1442-1451. doi:10.1016/j.biopsych.2005.04.001
- Kessler, R. C., Adler, L. A., Gruber, M. J., Sarawate, C. A., Spencer, T., & Van Brunt, D. L. (2007). Validity of the World Health Organization Adult ADHD Self-Report Scale (ASRS) Screener in a representative sample of health plan members. *International Journal of Methods in Psychiatric Research*, 16(2), 52-65. doi:10/1002/mpr.208

- Kessler, R. C., Berglund, P., Chiu, W. T., Demler, O., Heeringa, S., Hiripi, E., . . . Zheng, H. (2004). The US national comorbidity survey replication (NCS-R): Design and field procedures. *International Journal of Methods in Psychiatric Research*, *13*(2), 69-92. doi:10.1002/mpr.167
- Kessler, R. C., & Ustun, T. B. (2004). The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). *International Journal of Methods in Psychiatric Research*, *13*(2), 93-121. doi:10.1002/mpr.168
- Khan, K. S., Dinnes, J., & Kleijnen, J. (2001). Systematic reviews to evaluate diagnostic tests. *European Journal of Obstetrics and Gynecology and Reproductive Biology*, *95*, 6-11. doi:10.1016/S0301-2115(00)00463-2
- Kitchens, H. (2001). [Review of the test Adult Attention Deficit Disorders Evaluation Scale]. In *The fourteenth mental measurements yearbook*. Available from <http://www.unl.edu/buros/>
- Klein, R. G., & Mannuzza, S. (1991). Long-term outcome of hyperactive children: A review. *Journal of the American Academy of Child & Adolescent Psychiatry*, *30*(3), 383-387. doi:10.1097/00004583-199105000-00005
- Knouse, L. E., Bagwell, C. L., Barkley, R. A., & Murphy, K. R. (2005). Accuracy of self-evaluation in adults with ADHD: Evidence from a driving study. *Journal of Attention Disorders*, *8*(4), 221-234. doi:10.1177/1087054705280159
- Knouse, L. E., & Safren, S. A. (2010). Adult attention-deficit hyperactivity disorder. In L. Baer & M. Blais (Eds.), *Handbook of clinical rating scales and assessment in psychiatry and mental health* (pp. 195-208). Totowa, NJ: Humana Press.

- Kollins, S. H., McClernon, J., & Fuemmeler, B. F. (2005). Association between smoking and attention-deficit/hyperactivity disorder symptoms in a population-based sample of young adults. *Archives of General Psychiatry*, *62*, 1142-1147. doi:10.1001/archpsyc.62.10.1142
- Kooij, J. J. S., Boonstra, A. M., Swinkels, S. H. N., Bekker, E. M., Noord, I. d., & Buitelaar, J. K. (2008). Reliability, validity, and utility of instruments for self-report and informant report concerning symptoms of ADHD in adult patients. *Journal of Attention Disorders*, *11*(4), 445-458. doi:10.1177/1087054707299367
- Kooij, J. J. S., Buitelaar, J. K., vandenOord, E. J., Furer, J. W., Rijnders, C. A., & Hodiament, P. P. G. (2005). Internal and external validity of attention-deficit hyperactivity disorder in a population-based sample of adults. *Psychological Medicine*, *35*, 817-827. doi:10.1017/S003329170400337X
- Lahey, B. B., Applegate, B., McBurnett, K., Biederman, J., Greenhill, L., Hynd, G. W., . . . Shaffer, D. (1994). DSM-IV field trials for attention deficit hyperactivity disorder in children and adolescents. *American Journal of Psychiatry*, *151*(11), 1673-1685. Retrieved from <http://ajp.psychiatryonline.org/cgi/content/abstract/151/11/1673>
- La Malfa, G., Lassi, S., Bertelli, M., Pallanti, S., & Albertini, G. (2008). Detecting attention-deficit/hyperactivity disorder (ADHD) in adults with intellectual disability: The use of Conners' Adult ADHD Rating Scales (CAARS). *Research in Developmental Disabilities*, *29*, 158-164. doi:10.1016/j.ridd.2007.02.002
- Lambert, N. M., & Hartsough, C. S. (1998). Prospective study of tobacco smoking and substance dependencies among samples of ADHD and non-ADHD participants.

Journal of Learning Disabilities, 31(6), 533-544.

doi:10.1177/002221949803100603

Lewandowski, L. J., Lovett, B. J., Coddington, R. S., & Gordon, M. (2008). Symptoms of ADHD and academic concerns in college students with and without ADHD diagnoses. *Journal of Attention Disorders*, 12(2), 156-161.

doi:10.1177/1087054707310882

Luty, J., Arokiadass, R. S. M., Sarkhel, A., Easow, J. M., Desai, R., Moorti, O. P., & el Hindy, N. (2009). Validation of self-report instruments to assess attention deficit hyperactivity disorder symptoms in adults attending community drug and alcohol services. *Journal of Addiction Medicine*, 3, 151-154.

doi:10.1097/ADM.0b013e31819343d0

Mackin, R. S., & Horner, M. D. (2005). Relationship of the Wender Utah Rating Scale to objective measures of attention. *Comprehensive Psychiatry*, 46(6), 468-471.

doi:10.1016/j.comppsy.2005.03.004

Magnusson, P., Smari, J., Siguroardottir, D., Baldursson, G., Sigmundsson, J., Kristjansson, K., . . . Guomundsson, O. O. (2006). Validity of self-report and informant rating scales of adult ADHD symptoms in comparison with a semistructured diagnostic interview. *Journal of Attention Disorders*, 9(3), 494-503.

doi:10.1177/1087054705283650

Mannuzza, S., & Klein, R. G. (2000). Long-term prognosis in attention-deficit/hyperactivity disorder. *Child and Adolescent Psychiatric Clinics of North America*, 9(3), 711-726. Retrieved from <http://psycnet.apa.org/psycinfo/2000-00431-014>

- Mannuzza, S., Klein, R. G., Bessler, A., Malloy, P., & LaPadula, M. (1993). Adult outcome of hyperactive boys: Educational achievement, occupational rank, and psychiatric status. *Archives of General Psychiatry*, *50*(7), 565-576. Retrieved from <http://archpsyc.ama-assn.org/cgi/content/abstract/50/7/565>
- Mannuzza, S., Klein, R. G., Bessler, A., Malloy, P., & LaPadula, M. (1998). Adult psychiatric status of hyperactive boys grown up. *The American Journal of Psychiatry*, *155*(4), 493-498. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/9545994>
- Mannuzza, S., Klein, R. G., & Moulton, J. L. (2003). Persistence of attention-deficit/hyperactivity disorder into adulthood: What have we learned from the prospective follow-up studies? *Journal of Attention Disorders*, *7*(2), 93-100. doi:10.1177/108705470300700203
- Marks, D. J., Newcorn, J. H., & Hallperin, J. M. (2001). Comorbidity in adults with attention-deficit/hyperactivity disorder. In J. Wasserstein, L. E. Wolf, & F. F. LaFever (Eds.), *Adult attention deficit disorder: Brain mechanisms and life outcomes* (pp. 216-238). New York, NY: New York Academy of Sciences.
- McBurnett, K., Pfiffner, L. J., & Frick, P. J. (2001). Symptom properties as a function of ADHD type: An argument for continued study of sluggish cognitive tempo. *Journal of Abnormal Child Psychology*, *29*(3), 207-213. doi:10.1023/A:1010377530749
- McCann, B. S., Scheele, L., Ward, N., & Roy-Byrne, P. (2000). Discriminant validity of the Wender Utah Rating Scale for attention-deficit/hyperactivity disorder in

adults. *The Journal of Neuropsychiatry and Clinical Neurosciences*, 12, 240-245.

doi:10.1176/appi.neuropsych.12.2.240

McCarney, S. B., & Anderson, P. D. (1996a). *Adult Attention Deficit Disorders*

Evaluation Scale: Home version technical manual. Columbia, MO: Hawthorne Educational Services, Inc.

McCarney, S. B., & Anderson, P. D. (1996b). *Adult Attention Deficit Disorders*

Evaluation Scale: Self-report version technical manual. Columbia, MO: Hawthorne Educational Services, Inc.

McCarney, S. B., & Anderson, P. D. (1996c). *Adult Attention Deficit Disorders*

Evaluation Scale: Work version technical manual. Columbia, MO: Hawthorne Educational Services, Inc.

McGough, J. J. & Barkley, R. A. (2004). Diagnostic controversies in adult attention

deficit hyperactivity disorder. *American Journal of Psychiatry*, 161(11), 1948-1956. doi:10.1176/appi.ajp.161.11.1948

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(4), 463-488. doi:10.1093/clipsy.8.4.463

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(3), 159-166. doi:10.1177/108705479700200302

Montano, B. (2004). Diagnosis and treatment of ADHD in adults in primary care.

Journal of Clinical Psychiatry, 65(3), 18-21. Retrieved from <http://psycnet.apa.org/psycinfo/2004-12838-003>

- Morgan, G. A., Gliner, J. A., & Harmon, R. J. (2006). *Understanding and evaluating research in applied and clinical settings*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Muniz, L. (1996). Test review: Brown Attention-Deficit Disorder Scales and Brown ADD Diagnostic Forms. *Diagnostique*, 22(1), 63-76. Retrieved from Education Resources Information Center (ERIC).
- Murphy, K. R., & Adler, L. A. (2004). Assessing attention-deficit/hyperactivity disorder in adults: Focus on rating scales. *Journal of Clinical Psychiatry*, 65(3), 8-11. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15046530>
- Murphy, K., & Barkley, R. A. (1996a). Attention deficit hyperactivity disorder adults: Comorbidities and adaptive impairments. *Comprehensive Psychiatry*, 37(6), 393-401. doi:10.1016/S0010-440X(96)90022-X
- Murphy, K., & Barkley, R. A. (1996b). Prevalence of DSM-IV symptoms of ADHD in adult licensed drivers: Implications for clinical diagnosis. *Journal of Attention Disorders*, 1(3), 147-161. doi:10.1177/108705479600100303
- Murphy, K. R., Barkley, R. A., & Bush, T. (2002). Young adults with attention deficit hyperactivity disorder: Subtype differences in comorbidity, educational and clinical history. *Journal of Nervous and Mental Disease*, 190(3), 147-157. doi:10.1097/00005053-200203000-00003
- Murphy, K. R., & LeVert, S. (1995). *Out of the fog: Treatment options and coping strategies for adult attention deficit disorder*. New York, NY: Hyperion.

- Murphy, P., & Schachar, R. (2000). Use of self-ratings in the assessment of symptoms of attention deficit hyperactivity disorder in adults. *American Journal of Psychiatry*, *157*, 1156-1159. doi:10.1176/appi.ajp.157.7.1156
- Murray, C., & Weiss, M. (2001). Assessment of adult ADHD: Current guidelines and issues. *Anuario de Psicologia*, *32*(4), 23-33. Retrieved from <http://www.raco.cat/index.php/anuariopsicologia/article/viewFile/61689/88456>
- National Institutes of Mental Health. (1998). *Can adults have ADHD?* Retrieved from <http://www.nimh.nih.gov/health/publications/attention-deficit-hyperactivity-disorder/can-adults-have-adhd.shtml>
- National Resource Center on ADHD. (2003). *Diagnosis of AD/HD in Adults (WWK9)*. Retrieved from <http://www.help4adhd.org/en/treatment/guides/WWK9>
- North Carolina School of Science and Mathematics Statistics Leadership Institute. (1999). *Categorical Data Analysis*. Retrieved from http://www.ncssm.edu/courses/math/Stat_Inst/Stats2007/Stat%20and%20Calc/Sensitivity%20and%20Specificity.pdf
- Penny, A. M., Waschbusch, D. A., Klein, R. M., Corkum, P., & Eskes, G. (2009). Developing a measure of sluggish cognitive tempo for children: Content validity, factor structure, and reliability. *Psychological Assessment*, *21*(3), 380-389. doi:10.1037/a0016600
- Reed, J. C. (2001). [Review of the test Adult Attention Deficit Disorders Evaluation Scale]. In *The fourteenth mental measurements yearbook*. Available from <http://www.unl.edu/buros/>

- Rosler, M., Retz, W., & Stieglitz. (2010). Psychopathological rating scales as efficacy parameters in adult ADHD treatment investigations: Benchmarking instruments for international multicenter trials. *Pharmacopsychiatry*, *43*(3), 92-98.
doi:10.1055/s-0029-1242819
- Rosler, M., Retz, W., Thome, J., Schneider, M., Stieglitz, R. D., & Falkai, P. (2006). Psychopathological rating scales for diagnostic use in adults with attention-deficit/hyperactivity disorder (ADHD). *European Archives of Psychiatry and Clinical Neuroscience*, *256*(Suppl. 1), 1/3-1/11. doi:10.1007/s00406-006-1001-7
- Rossini, E. D., & O'Connor, M. A. (1995). Retrospective self-reported symptoms of attention-deficit hyperactivity disorder: Reliability of the Wender Utah Rating Scale. *Psychological Reports*, *77*(3), 751-754. doi:10.2466/pr0.1995.77.3.751
- Roy-Byrne, P., Scheele, L., Brinkley, J., Ward, N., Wiatrak, C., Russo, J., . . . Varley, C. (1997). Adult attention-deficit hyperactivity disorder: Assessment guidelines based on clinical presentation to a specialty clinic. *Comprehensive Psychiatry*, *38*(3), 133-140. doi:10.1016/S0010-440X(97)90065-1
- Ryan, J. J., Lopez, S. J., & Sumerall, S. W. (2001). Understanding test construction. In W. I. Dorfman & M. Hersen (Eds.), *Understanding psychological assessment* (pp. 1-15). Dordrecht, Netherlands: Kluwer Academic.
- Searight, H. R., Burke, J. M., & Rottnek, F. (2000). *Adult ADHD: Evaluation and treatment in Family Medicine*. Retrieved from <http://www.aafp.org/afp/20001101/2077.html>
- Shekim, W. O., Asarnow, R. F., Hess, E., Zaucha, 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.

doi:10.1016/0010-440X(90)90026-O

Shultz, K. S., & Whitney, D. J. (2005). *Measurement theory in action: Case studies and exercises*. Thousand Oaks, CA: Sage.

Silverman, W. K., & Rabian, B. (1999). In D. Shaffer, C. P. Lucas, & J. E. Richters (Eds.), *Diagnostic assessment in child and adolescent psychiatry* (pp. 127-166). New York, NY: The Guildford Press.

Simon, V., Czobor, P., Balint, S., Meszaros, A., & Bitter, I. (2009). Prevalence and correlates of adult attention-deficit hyperactivity disorder: Meta-analysis. *The British Journal of Psychiatry*, 194, 204-211. doi:10.1192/bjp.bp.107.048827

Smart, A. (2006). A multi-dimensional model of clinical utility. *International Journal for Quality in Health Care*, 1-6. doi:10.1093/intqhc/mzl034

Sparrow, E. P. (2010). *Essentials of Conners behavior assessments*. Hoboken, NJ: John Wiley & Sons.

Spencer, T. (2004). ADHD treatment across the life cycle. *Journal of Clinical Psychiatry*, 65(3), 22-26. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/15046532>

Spencer, T. J., Adler, L. A., Qiao, M., Saylor, K. E., Brown, T. E., Holdnack, J. A., . . .

Kelsey, D. K. (2010). Validation of the Adult ADHD Investigator Symptom Rating Scale (AISRS). *Journal of Attention Disorders*, 14(1), 57-68.

doi:10.1177/1087054709347435

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. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/9384867>

- Spencer, T. J., Mick, E., Surman, C. B. H., Hammerness, P., Doyle, R., Alcardi, M., . . . Biederman, J. (2011). A randomized, single-blind, substitution study of OROS methylphenidate (concerta) in ADHD adults receiving immediate release methylphenidate. *Journal of Attention Disorders, 15*(4), 286-294.
doi:10.1177/1087054710367880
- Spiliotopoulou, G. (2009). Reliability reconsidered: Cronbach's alpha and pediatric assessment in occupational therapy. *Australian Occupational Therapy Journal, 56*, 150-155. doi:10.1111/j.1440-1630.2009.00785.x
- Stefanatos, G. A., & Baron, I. S. (2007). Attention-Deficit/Hyperactivity Disorder: A neuropsychological perspective towards DSM-V. *Neuropsychology Review, 17*, 5-38. doi:10.1007/s11065-007-9020-3
- Stein, M. A., Sandoval, R., Szumowski, E., Roizen, N., Reinecke, M. A., Blondis, T. A., . . . Klein, Z. (1995). Psychometric characteristics of the Wender Utah Rating Scale (WURS): Reliability and factor structure for men and women. *Psychopharmacology Bulletin, 31*(2), 425-433. Retrieved from PsycINFO.
- Streiner, D. L. (1993). A checklist for evaluating the usefulness of rating scales. *Canadian Journal of Psychiatry, 38*(2), 140-148. Retrieved from <http://psycnet.apa.org/psycinfo/1993-39755-001>
- Sullivan, B. K., May, K., & Galbally, L. (2007). Symptom exaggeration by college adults in attention-deficit hyperactivity disorder and learning disorder assessments. *Applied Neuropsychology, 14*(3), 189-207. doi:10.1080/09084280701509083
- Surman, C., Hammerness, P., Petty, C., Doyle, R., Chu, N., Gebhard, N., . . . Biederman, J. (2010). Atomoxetine in the treatment of adults with subthreshold and/or late

- onset attention-deficit hyperactivity disorder- not otherwise specified (ADHD-NOS): A prospective open-label 6-week study. *CNS Neuroscience & Therapeutics*, 16(1), 6-12. doi:10.1111/j.1755-5949.2009.00124.x
- Taylor, A., Deb, S., & Unwin, G. (2011). Scales for the identification of adults with attention deficit hyperactivity disorder (ADHD): A systematic review. *Research in Developmental Disabilities*, 32, 924-938. doi:10.1016/j.ridd.2010.12.036
- Tercyak, K. P., Peshkin, B. N., Walker, L. R., & Stein, M. A. (2002). Cigarette smoking among youth with attention-deficit/hyperactivity disorder: Clinical phenomenology, comorbidity, and genetics. *Journal of Clinical Psychology in Medical Settings*, 9(1), 36-50. doi:10.1023/A:1014183912859
- Torgersen, T., Gjervan, B., & Rasmussen, K. (2006). ADHD in adults: A study of clinical characteristics, impairment and comorbidity. *Nordic Journal of Psychiatry*, 60(1), 38-43. doi:10.1080/08039480500520665
- Triolo, S. J., & Murphy, K. R. (1996). *Attention Deficit Scales for Adults (ADSA)*. Bristol, PA: Brunner/Mazel.
- Trochim, W. M. K., & Donnelly, J. P. (2008). *Research methods knowledge base* (3rd ed.). Mason, OH: Atomic Dog.
- Tyron, W. W., & Bernstein, D. (2003). Understanding measurement. In J. C. Thomas, & M. Hersen (Eds.), *Understanding research in clinical and counseling psychology* (pp. 27-68). Mahwah, NJ: Lawrence Erlbaum Associates.
- Van Voorhees, E. E., Hardy, K. K., & Kollins, S. H. (2011). Reliability and validity of self- and other-ratings of symptoms of ADHD in adults. *Journal of Attention Disorders*, 15(3), 224-234. doi:10.1177/1087054709356163

- Wahlstedt, C., & Bohlin, G. (2010). DSM-IV defined inattention and sluggish cognitive tempo: Independent and interactive relations to neuropsychological factors and comorbidity. *Child Neuropsychology, 16*(4), 350-365.
doi:10.1080/09297041003671176
- Wallis, C. (1994, July 18). Life in overdrive. *Time*, 42-50.
- 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. *The American Journal of Psychiatry, 150*(6), 885-890. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/21827477>
- Weiss, G., & Hechtman, L. (1993). *Hyperactive children grown up: ADHD in children, adolescents, and adults* (2nd ed.). New York, NY: Guilford Press.
- Weiss, M. D., & Weiss, J. R. (2004). A guide to treatment of adults with ADHD. *Journal of Clinical Psychiatry, 65*, 27-37. Retrieved from http://www.coloradohealthpartnerships.com/provider/clin_gd/dx_based/ADHD_for_Adults.pdf
- Wender, P. H. (1995). *Attention-deficit hyperactivity disorder in adults*. New York, NY: Oxford University Press.
- Wender, P. H. (2000). *ADHD: Attention-deficit hyperactivity disorder in children, adolescents, and adults*. New York, NY: Oxford University Press.
- West, S. L., Mulsow, M., & Arredondo, R. (2003). Factor analysis of the Attention Deficit Scales for Adults (ADSA) with a clinical sample of outpatient substance abusers. *The American Journal on Addictions, 12*(2), 159-165.
doi:10.1111/j.1521-0391.2003.tb00614.x

- Whalen, C. K., Jamner, L. D., Henker, B., Delfino, R. J., & Lozano, J. M. (2002). The ADHD spectrum and everyday life: Experience sampling of adolescent moods, activities, smoking, and drinking. *Child Development, 73*(1), 209-227. doi:10.1111/1467-8624.00401
- Wierzbicki, M. (2005). Reliability and validity of the Wender Utah Rating Scale for college students. *Psychological Reports, 96*(3), 833-839. Retrieved from Academic Search Complete.
- Wolf, L. E., & Wasserstein, J. (2001). Adult ADHD: Concluding thoughts. In J. Wasserstein, L. E. Wolf, & F. F. LeFever (Eds.), *Adult attention deficit disorder: Brain mechanisms and life outcomes* (pp. 396-408). New York, NY: New York Academy of Sciences.
- Zhang, S., Faries, D. E., Vowles, M., & Michelson, D. (2005). ADHD Rating Scale IV: Psychometric properties from a multinational study as a clinician-administered instrument. *International Journal of Methods in Psychiatric Research, 14*(4), 186-201. doi:10.1002/mpr.7
- Zucker, M., Morris, M. K., Ingram, S. M., Morris, R. D., & Bakeman, R. (2002). Concordance of self- and informant ratings of adults' current and childhood attention-deficit/hyperactivity disorder symptoms. *Psychological Assessment, 14*(4), 379-389. doi:10.1037//1040-3590.14.4.379

APPENDIX B

Diagnostic Criteria for Attention-Deficit/Hyperactivity Disorder (DSM-IV-TR, 2000)

A. Either (1) or (2):

(1) *inattention*: six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

- (a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
- (b) often has difficulty sustaining attention in tasks or play activities
- (c) often does not seem to listen when spoken to directly
- (d) often does not follow through on instructions and fails to finish school work, chores, or duties in the workplace (not due to oppositional behavior or failure to understand instructions)
- (e) often has difficulty organizing tasks and activities
- (f) often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework)
- (g) often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools)
- (h) is often easily distracted by extraneous stimuli
- (i) is often forgetful in daily activities

(2) **hyperactivity-impulsivity**: six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Hyperactivity

- (a) often fidgets with hands or feet or squirms in seat
- (b) often leaves seat in classroom or in other situations in which remaining seated is expected
- (c) often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness)
- (d) often has difficulty playing or engaging in leisure activities quietly
- (e) is often "on the go" or often acts as if "driven by a motor"
- (f) often talks excessively

Impulsivity

- (g) often blurts out answers before questions have been completed
- (h) often has difficulty awaiting turn
- (i) often interrupts or intrudes on others (e.g., butts into conversations or games)

B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.

C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).

- D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.
- E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorders, or a Personality Disorder).

Codes based on type:

314.01 Attention-Deficit/Hyperactivity Disorder, Combined Type: if both Criteria A1 and A2 are met for the past 6 months

314.00 Attention-Deficit/Hyperactivity Disorder, Predominantly Inattentive Type: if Criterion A1 is met but Criterion A2 is not met for the past 6 months

314.01 Attention-Deficit/Hyperactivity Disorder, Predominantly Hyperactive-Impulsive Type: if Criterion A2 is met but Criterion A1 is not met for the past 6 months

Coding note: For individuals (especially adolescents and adults) who currently have symptoms that no longer meet full criteria, "In Partial Remission" should be specified.

Appendix C

Table 1. Descriptive Summary of Adult ADHD Rating Scales

Table 1

Descriptive Summary of Adult ADHD Rating Scales

Scale Author/Date Publisher/Source	Forms (# of items)	Normative sample (<i>n</i> & age range) (by form)	Factors measured (by form)	Response format (Likert scale)
A-ADDES McCarney & Anderson, 1996a, 1996b, 1996c Hawthorne Educational Services	Self-report (58 items) ^a Home (46 items) Work (54 items)	Self-report <i>n</i> = 2,204 Ages 18 - 71+ Home <i>n</i> = 2,003 Ages 18 - 65+ Work <i>n</i> = 1,867 Ages 18 - 65+	All forms: 2 factors: inattentive and hyperactive-impulsive	(0) do not engage in the behavior, (1) one to several times per month, (2) one to several times per week, (3) one to several times per day, and (4) one to several times per hour
ASRS Adler, Kessler, & Spencer, 2003 World Health Organization	Full (18 items) Screener (6 items)	Screener <i>n</i> = 154 Ages 18 - 44 (Kessler, Adler, Ames et al., 2005)	2 factors: inattention and hyperactivity-impulsivity (Kessler, Adler, Ames et al., 2005)	(0) never, (1) rarely, (2) sometimes, (3) often, and (4) very often
ADSA Triolo & Murphy, 1996 Brunner/Mazel	Self-report form (54 items)	<i>n</i> = 306 Ages 17+	9 factors: attention- focus/concentration, interpersonal, behavior- disorganized activity, coordination, academic theme, emotive, consistency/long-term,	Never, seldom, sometimes, often, and always

(continued)

Scale Author/Date Publisher/Source	Forms (# of items)	Normative sample (<i>n</i> & age range) (by form)	Factors measured (by form)	Response format (Likert scale)
ADSA			childhood, and negative-social	
BAARS-IV Barkley, 2011 Guilford Press	Current symptoms self-report (30 items) Childhood symptoms self-report (20 items) Current symptoms other-report (30 items) Childhood symptoms other-report (20 items) Quick screen current symptoms self-report (8 items) Quick screen childhood symptoms other-report (6 items)	Self-report forms <i>n</i> = 1,249 Ages 18 - 70+ Other-report forms: -	Current symptoms forms (4 factors): inattention, sluggish cognitive tempo, hyperactivity, and impulsivity Childhood symptoms forms (2 factors): inattention and hyperactivity-impulsivity	(1) never or rarely, (2) sometimes, (3) often, and (4) very often
BADDS Brown, 1996 Pearson PsychCorp	Self-report (40 items)	<i>n</i> = 285 Ages 18 - 40+	5 factors: organizing and activating to work, sustaining attention and concentration, sustaining energy and effort, managing affective	(0) never, (1) once a week or less, (2) twice a week, and (3) almost daily

(continued)

Scale Author/Date Publisher/Source	Forms (# of items)	Normative sample (<i>n</i> & age range) (by form)	Factors measured (by form)	Response format (Likert scale)
BADDS			interference, and utilizing “working memory” and accessing recall	
CAARS Conners, Erhardt, & Sparrow, 1999 Multi-Health Systems Inc.	Self-report long (66 items) Other-report long (66 items) Self-report short (26 items) Other-report short (26 items) Self-report screening (30 items) Other-report screening (30 items)	Self-report forms n = 1,026 Ages 18 - 80 years Other-report forms n = 943 Ages 18-72 years Correctional sample (Conners, Sparrow, & Erhardt, 2004): Self-report forms n = 509 Ages 18 – 50+ years Other-report forms n = 220 Ages 18 – 50+ years	Long forms (9 factors): inattention/memory problems, hyperactivity/restlessness, impulsivity/emotional lability, problems with self-concept, DSM-IV inattentive symptoms, DSM-IV hyperactive-impulsive symptoms, DSM-IV ADHD symptoms total, ADHD Index, and the inconsistency index Short forms (6 factors): inattention/memory problems, hyperactivity/restlessness, impulsivity/emotional lability, problems with self-concept, ADHD index, and inconsistency	(0) not at all, never, (1) just a little, once in a while, (2) pretty much, often, and (3) very much, very frequently

(continued)

Scale Author/Date Publisher/Source	Forms (# of items)	Normative sample (<i>n</i> & age range) (by form)	Factors measured (by form)	Response format (Likert scale)
CAARS			index Screening forms (4 factors): DSM-IV inattentive symptoms, DSM-IV hyperactive/impulsive symptoms, DSM-IV ADHD symptoms total, and ADHD index	
WURS Ward, Wender, & Reimherr, 1993 -	Self-report (61 items) Short version (25 items)	Clinical sample (suspected ADHD) <i>n</i> = 81 Mean age 30.7 years Clinical sample (suspected depression) <i>n</i> = 70 Mean age 39.8 years Nonclinical sample <i>n</i> = 100 Mean age 42.5 years (Ward et al., 1993)	61-item (5 factors; Stein et al., 1995): Males- conduct problems, learning problems, stress intolerance, attention problems, and social skills/awkward Females- dysphoria, impulsive/conduct, learning problems, attention and organizational problems, and unpopular	(0) not at all or very slightly, (1) mildly, (2) moderately, (3) quite a bit, and (4) very much

(continued)

Scale Author/Date Publisher/Source	Forms (# of items)	Normative sample (n & age range) (by form)	Factors measured (by form)	Response format (Likert scale)
WURS			25-item (3 factors; McCann et al., 2000): behavior, dysthymia, and school/work problems	

Note: A-ADDES = Adult Attention Deficit Disorders Evaluation Scale; ASRS = Adult ADHD Self-Report Scale v1.1 Symptom Checklist; ADSA = Attention-Deficit Scales for Adults; BAARS-IV = Barkley Adult ADHD Rating Scale-IV; BADDs = Brown Attention-Deficit Disorder Rating Scales; CAARS = Conners' Adult ADHD Rating Scales; WURS = Wender Utah Rating Scale; Dash (-) denotes data were not available.

^aIf no citation is provided, then the data presented come from the scale manual.

Appendix D

Table 2. Psychometric Properties of Adult ADHD Rating Scales

Table 2

Psychometric Properties of Adult ADHD Rating Scales

Scale	Reliability Data			Validity Data	
	Internal Consistency	Test-retest Reliability	Inter-rater Reliability	Concurrent Convergent Divergent	Discriminant Sensitivity Specificity TCA
A-ADDES	.95 - .97 (self-report) ^a .94 - .97 (home) .96 - .98 (work)	.77 - .78 (self-report) .72 - .80 (home) .80 - .84 (work)	- (self-report) .38 - .62 (home) .61 - .73 (work)	Correlations among subscale raw scores were highly significant (self-report, home, and work)	Discriminant: Mean total ADHD subscale scores for ADHD and non-clinical group differed significantly (self-report and home)
ASRS	.88 (full version; Adler et al., 2006) .63 - .72 (screeener; Kessler et al., 2007)	.58 - .77 (screeener; Kessler et al., 2007)	-	.82 - .87 (screeener & Adult ADHD Clinician Diagnostic Scale v1.2; Kessler et al., 2007) .84 (18-item pilot ASRS & clinician-administered ADHD-Rating Scale; Adler et al., 2006)	SENS 56.3% SPEC 98.3% TCA 96.2% (full version; Kessler, Adler, Ames et al., 2005) SENS 68.7% SPEC 99.5% TCA 97.9% (screeener; Kessler, Adler, Ames et al., 2005)

(continued)

Scale	Reliability Data			Validity Data	
	Internal Consistency	Test-retest Reliability	Inter-rater Reliability	<u>Concurrent</u> Convergent Divergent	Discriminant Sensitivity Specificity TCA
ASRS					SENS 89% SPEC 83% (screeener; Luty et al., 2009)
ADSA	.89 (total score) (-.11) (academic theme) - .82 (emotive) .81 (SH) .93 (total score; West et al., 2003)	-	-	.22 - .51 (total ADSA score significantly correlated with all three [Inattention, Hyperactivity, & Impulsivity] DSM-IV categories; West et al., 2003)	SENS 82% SPEC 90.8% TCA 88.86% (based on 4 subscales)
BAARS-IV ^b	.90 (Current ADHD Inattention) .78 (Current ADHD Hyperactivity) .81 (Current ADHD)	.66 - .88 (current symptoms) .73 - .82 (childhood symptoms)	.67 - .70 (P-BAARS, current symptoms; Barkley, Murphy, & Fischer, 2008) .73 - .75 (P-BAARS, childhood symptoms; Barkley et al., 2008) .59 - .80 (P-BAARS ^c ,	.22 - .31 (P-BAARS & CPT; Barkley et al., 2008) ^d 21 - 69% shared variance between P-BAARS & BDEFS .14 - .50 (ADHD current symptoms)	SENS 97% (ADHD group) SENS 98% (community control group) (easily distracted by extraneous stimuli, UMASS; Barkley et al. 2008)

(continued)

Scale	Reliability Data			Validity Data	
	Internal Consistency	Test-retest Reliability	Inter-rater Reliability	<u>Concurrent</u> Convergent Divergent	Discriminant Sensitivity Specificity TCA
BAARS-IV	Impulsivity) .91 (Current ADHD total score) .94 (Childhood ADHD Inattention) .91 (Childhood ADHD Hyperactivity-Impulsivity) .95 (Childhood ADHD total score)		current symptoms; Barkley et al., 2011) .53 - .75 (P-BAARS, childhood symptoms; Barkley et al., 2011)	scores & occupational measures; Barkley et al., 2008) (-.38) – (-.25) (self-rated ADHD symptoms & marital satisfaction; Barkley et al., 2008) (-.06) - .28 (self-rated current ADHD symptoms & driving measures; Barkley et al., 2008) .40 - .79 (current & childhood self- and other-ratings & SCL-90-R Scales of Psychological Difficulties; Barkley et al., 2008)	SENS 99% (ADHD group) SENS 97% (community group) TCA 98% (6 of 18 symptoms, UMASS; Barkley et al., 2008)

(continued)

Scale	Reliability Data			Validity Data	
	Internal Consistency	Test-retest Reliability	Inter-rater Reliability	Concurrent Convergent Divergent	Discriminant Sensitivity Specificity TCA
BAARS-IV				.85 - .87 (P-BAARS & unidentified interview) DIV: (-.33) - .14 (P-BAARS & WRAT; Barkley et al., 2008) DIV: (-.08) – (-.03) (P-BAARS & IQ; Barkley et al., 2008)	
BADDS	.96 (combined sample) .32 - .80 (item-total correlations, combined sample) .71 - .79 (self-report; Kooij et al., 2008) .69 - .81 (other-report; Kooij et	-	.50 - .73 (Kooij et al., 2008)	Adults with ADD scored substantially lower on triad of WAIS-R subtests associated with Attention-Concentration than Verbal or Spatial triads	4% false negatives 6% false positives

(continued)

Scale	Reliability Data			Validity Data	
	Internal Consistency	Test-retest Reliability	Inter-rater Reliability	Concurrent Convergent Divergent	Discriminant Sensitivity Specificity TCA
BADDS	al., 2008)				
CAARS ^c	.86 - .92 (Erhardt, et al., 1999) .77 - .99 (Kooij et al., 2008) .74 - .90 (other-report; Kooij et al., 2008) .76 - .95 (self-report screening version; Adler et al., 2008) .74 - .94 (other-report screening version; Adler et al., 2008)	.80 - .91 (Erhardt et al., 1999) .85 - .95 (other-report)	Males: .41 (problems with self-concept) - .61 (impulsivity/emotional lability) Females: .41 (inattention/memory problems-short) – .68 (problems with self-concept-short) .45 - .87 (screening version; Adler et al., 2008) .44 - .61 (Kooij et al., 2008) .11 - .37 (kappa values; Van Voorhees et al., 2011)	.37 - .67 (CAARS & WURS; Erhardt et al., 1999) .61 - .74 (CAARS & K-SADS; Belendiuk et al., 2007)	SENS 82% SPEC 87% TCA 85% (Erhardt et al., 1999) SENS 71% SPEC 75% TCA 73% (ADHD Index; Erhardt et al., 1999) SENS .39 (impulsivity/emotional lability) - .95 (DSM-IV Inattentive Symptoms Index) ADHD Index (SENS .65, SPEC .61) (Van Voorhees et al., 2011) SENS 97% SPEC 83% (Luty et al., 2009)

(continued)

Scale	Reliability Data			Validity Data	
	Internal Consistency	Test-retest Reliability	Inter-rater Reliability	Concurrent Convergent Divergent	Discriminant Sensitivity Specificity TCA
WURS	.69 - .91 (61-item; Ward et al., 1993)	.68 - .90 (61-item; Wierzbicki, 2005)	-	.41 - .49 (WURS & Parents' Rating Scale; Ward et al., 1993)	SENS 96% SPEC 96% (25-item, cutoff score 36 or higher; Ward et al., 1993)
	.86 - .92 (25-item; Ward et al., 1993)	.62 - .98 (25-item; Wierzbicki, 2005)		(-.11) - .19 (WURS & neuropsychological measures, 25-item; Hill et al., 2009)	SENS 72% SPEC 58% TCA 65% (25-item; McCann et al., 2000)
	.35 - .90 (SH, 25-item; Ward et al., 1993)			(-.70) - .60 (WURS & neuropsychological test scores; Mackin & Horner, 2005)	SENS 88% SPEC 70% (25-item; Luty et al., 2009)
	.72 - .84 (males, 61-item; Stein et al.; 1995)			.33 - .55 (WURS & depressive measures; Wierzbicki, 2005)	
	.69 - .89 (females, 61-item; Stein et al., 1995)			.21 - .56 (WURS & PAI; Hill et al., 2009)	
	.89 (61-item; Rossini & O'Connor, 1995)				

(continued)

Scale	Reliability Data			Validity Data	
	Internal Consistency	Test-retest Reliability	Inter-rater Reliability	<u>Concurrent</u> Convergent Divergent	Discriminant Sensitivity Specificity TCA
WURS	.88 (25-item; Rossini & O'Connor, 1995) .87 - .89 (61-item; Wierzbicki, 2005) .89 - .91 (25-item; Wierzbicki, 2005) .95 (total; McCann et al., 2000)				

Note: A-ADDES = Adult Attention Deficit Disorders Evaluation Scale; ASRS = Adult ADHD Self-Report Scale v1.1 Symptom Checklist; ADSA = Attention-Deficit Scales for Adults; BAARS-IV = Barkley Adult ADHD Rating Scale-IV; P-BAARS = Prototype- Barkley Adult ADHD Rating Scale; BADDSS = Brown Attention-Deficit Disorder Rating Scales; CAARS = Conners' Adult ADHD Rating Scales; WURS = Wender Utah Rating Scale; DIV = divergent validity; SENS = Sensitivity; SPEC = Specificity; TCA = Total Classification Accuracy; Dash (-) denotes data were not available; Parentheses denote a negative value; SH = split-half correlation; CPT = Conners' Continuous Performance Test; BDEFS = Barkley Deficits in Executive Functioning Scale; WRAT = Wide Range Achievement Test; UMASS = University of Massachusetts study; PAI = Personality Assessment Inventory; K-SADS = Kiddie-Schedule for Affective Disorders and Schizophrenia.

^aIf no citation is provided, then the data presented come from the scale manual. ^bBAARS-IV psychometric properties reported for self-report version only. ^cPsychometric domain not yet assessed for the BAARS-IV scale; data reported were collected for a prototype

version of the scale (P-BAARS). ^dContents of this cell represent a sampling of the considerable convergent, concurrent, and divergent validity data pertaining to the BAARS-IV or P-BAARS. For a more complete review of these data, see Barkley, Murphy, and Fischer (2008) and Barkley, 2011. ^eThe psychometric data reported for the CAARS pertain to the self-report, long form unless otherwise specified.