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Abstract

Objective: The current study sought to establish psychometric properties of the ADHD-FX (a culturally sensitive measure designed to assess functional impairment related to ADHD) in a dual-site clinical sample. **Method:** We analyzed patient charts of 67 children (47 boys and 20 girls, ages 5 to 15 years) receiving comprehensive assessments from two university-based ADHD clinics. **Results:** The parent and teacher ADHD-FX rating scales demonstrated good psychometric properties via adequate reliability (Cronbach's $\alpha > .70$), convergent construct validity (significant correlations with majority of theoretically related measures), and divergent construct validity (insignificant correlations with majority of theoretically unrelated measures). **Conclusion:** Results extend upon previously published psychometric analyses to suggest that the ADHD-FX is a reliable and valid measure for parents *and* teachers to assess functional impairment related to ADHD (i.e., difficulties with academic achievement, social competence, and familial relationships) in community *and* clinical populations. Clinical implications and future directions are discussed.

Keywords

ADHD is one of the most common childhood mental health disorders, affecting approximately 5% to 10% of youth worldwide (American Psychiatric Association, 2013; Faraone, Sergeant, Gillberg, & Biederman, 2003; Willcutt, 2012). Depending on the number of symptoms displayed, a child with ADHD is diagnosed with one of the three following presentations: Predominantly Inattentive (ADHD-I; six or more symptoms of inattention and fewer than six symptoms of hyperactivity/impulsivity), Predominantly Hyperactive/Impulsive (ADHD-HI; six or more symptoms of hyperactivity/impulsivity and fewer than six symptoms of inattention), or Combined (ADHD-C; six or more symptoms of inattention and six or more symptoms of hyperactivity/impulsivity; American Psychiatric Association, 2013).

In the past decade, experts have begun to emphasize the need for researchers and clinicians alike to assess for not only ADHD symptoms but also functional impairment (Gathje, Lewandowski, & Gordon, 2008; Gordon et al., 2006; Haack & Gerdes, 2011). First and foremost, American Psychiatric Association's (2013) *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM-5*) states that an individual must demonstrate symptoms interfering with or reducing the quality of social, academic, and/or occupational functioning to warrant an ADHD diagnosis (American Psychiatric Association, 2013; for reviews, see Gathje et al., 2008; Gordon et al., 2006; Willcutt, 2012). Furthermore, the consideration of functional impairment in ADHD diagnoses is called for in current clinical practice guidelines across various disciplines, such the American Academy of Pediatrics' (AAP) Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of ADHD in Children and Adolescents (AAP, Subcommittee on Attention-Deficit/Hyperactivity Disorder, & Steering Committee on Quality Improvement and Management, 2011) and the National Institute for Health and Clinical Excellence (NICE) Mental Health Guidelines for the Diagnosis and Management of ADHD in Children, Young People and Adults developed by the National Collaborating Centre for Mental Health (NCCMH; Kendall, Taylor, Perez, & Taylor, 2008)

In addition to serving as a requirement for diagnosis, functional impairment may be the most relevant construct associated with those affected by the disorder. Specifically, impairment often is the most commonly identified reason for ADHD help-seeking and typically serves as the target of ADHD treatment goals (Pelham, Fabiano, & Massetti, 2005). Impairment may be an especially relevant construct for certain cultural groups, such as Latinos, due to influence from traditional values and beliefs (Gerdes, Lawton, Haack, & Hurtado, 2013; Rothe, 2005). For example, children with ADHD often demonstrate home impairment in the form of noncompliance to parental instructions (Bauermeister et al., 2005), which can be perceived as particularly concerning to Latino caregivers in the context of "Respeto" (i.e., emphasis on respecting and obeying authority) and "Familismo" (i.e., emphasis on familial interconnectedness, honor, and reciprocity; Calzada, Fernandez, & Cortes, 2010; Haack & Gerdes, 2011; Rodriguez, Mira, Paez, & Myers, 2007).

Furthermore, functional impairment appears to be a more unbiased and stable construct of ADHD than symptomatology. Specifically, although reports of ADHD symptoms have been found to vary based on cultural orientation, measures of functional impairment do not (e.g., Gerdes et al., 2013). In addition, while ADHD symptoms (and particularly hyperactive/impulsive symptoms) appear to decrease with age, functional impairment appears to remain stable throughout the life span (Miller, Ho, & Hinshaw, 2012; Willcutt et al., 2012). It is not difficult to imagine how one may "grow out" of symptoms, such as "appears driven by a motor" or "runs and climbs excessively," but continue to demonstrate difficulties with work completion, interpersonal relationships, and following routines into adolescence and adulthood.

Despite guidelines calling for multi-informant, multi-context, and multi-method assessments, most children are diagnosed with ADHD via parent rating scales emphasizing symptoms over impairment due to time and financial constraints (Pelham et al., 2005). This is particularly concerning given evidence that ADHD prevalence is overestimated when diagnostic decisions are based solely on a single informant and/or partial *DSM* criteria (Gathje et al., 2008; Gordon et al., 2006; Willcutt, 2012). In fact, a recent meta-analysis by Willcutt (2012) demonstrated that ADHD rates were substantially reduced when the diagnosis required evidence of functional impairment as well as symptoms, especially when parents or teachers served as the sole informant (i.e., 31%-47% reduction). In summary, consideration of functional impairment is crucial in all ADHD diagnostic decisions regardless of the child's cultural background, and in addition, emphasizing functional impairment in ADHD assessments may be *particularly* beneficial for certain cultural groups, such as Latinos.

The ADHD-FX

The ADHD-FX was originally developed in 2012 to serve as an efficient and culturally sensitive measure of functional impairment related to ADHD (Haack, Gerdes, Lawton, & Schneider, 2016). The measure was designed to be administered to parents or teachers and assess three domains of functional impairment most relevant to children with ADHD: academic, social, and family problems (although teachers do not provide responses related to familial impairment). Thirty-two items were developed for the ADHD-FX as part of a bottom-up, mixed-method investigation of parental perceptions of problem recognition and functional impairment related to ADHD in a population deemed particularly at risk for problem-recognition barriers: low-acculturated Latino families. The ADHD-FX was designed to serve as a beneficial supplement to the assessment of ADHD symptomatology with any family, but

an especially important supplement when working with populations at risk for problem-recognition barriers, such as low-acculturated Latino families (Haack et al., 2016).

In 2014, the ADHD-FX demonstrated good initial psychometric and cultural properties with a community sample of Latino parents of school-aged children (Haack & Gerdes, 2017). Specifically, the parent-rated ADHD-FX score and all subscales demonstrated good reliability with high levels of internal consistency and test–retest reliability. In addition, the ADHD-FX and all subscales demonstrated good convergent construct validity by significantly correlating with all but one of the theoretically related subscales of functional impairment. The ADHD-FX also demonstrated good initial universal cultural properties, as demonstrated by discriminant validity with cultural measures. Specifically, none of the subscales or the overall ADHD-FX were significantly related to parental levels of behavioral or cognitive acculturation. Strong initial psychometric properties suggested that the ADHD-FX is a reliable, valid, and culturally appropriate measure of impairment for a community sample of Latino parents of school-aged children (Haack & Gerdes, 2017).

Theoretically, an assessment tool measuring a culturally universal construct should be reliable and valid regardless of the child or rater's background. Therefore, if functional impairment is a culturally universal construct of ADHD, and an assessment tool reliably and validly measures functional impairment, the measure should be psychometrically sound in cultural groups other than that for which it was developed. Thus, although the ADHD-FX was developed with a specific, at-risk population (i.e., Latinos), theoretically it should remain reliable and valid when utilized with children and raters from any background.

Goals of the Current Study

Initial psychometric properties of the ADHD-FX have been established with a community sample of Latino parents of school-aged children; however, the reliability and validity of the ADHD-FX has yet to be examined when rated by teachers, when rated by parents who do not identify as Latino, or when rating children from a clinical sample (Haack & Gerdes, 2017). Thus, the goal of the current study was to establish psychometric properties of the parent and teacher ADHD-FX rating scale with a dual-site, clinical sample. It was predicted that each theoretical subscale of the ADHD-FX (i.e., school, home, and peer for the parent version; school and peer for the teacher version) and the overall ADHD-FX would demonstrate good reliability, as evidenced by adequate internal consistency (i.e., Cronbach's α values > .70). In addition, it was predicted that all subscales and the overall ADHD-FX would demonstrate adequate convergent construct validity by correlating with theoretically related measures of ADHD symptoms and impairments in five domains: (a) mono-rater/mono-construct validity, (b) mono-rater/multi-construct validity, (c) multi-rater/mono-construct validity, (d) multi-rater/multi-construct validity, and (f) multi-method/multi-construct validity. See below for specific convergent construct validity predictions.

1. Mono-rater/mono-construct validity was expected to be demonstrated via
    a. significant correlations between the parent ADHD-FX ratings with parent-rated home impairment (measured by the Alabama Parenting Questionnaire [APQ] Involvement subscale; Shelton, Frick, & Wootton, 1996) and parent-rated social competence (measured by social competence/skills T-scores on the Child Behavior Checklist for Ages

6 to 18 [CBCL/6-18; Achenbach & Rescorla, 2001] or the Behavior Assessment System for Children–Second Edition [BASC-2; Reynolds & Kamphaus, 2004]), and

  b. significant correlations between the teacher ADHD-FX ratings with teacher-rated school behavior impairment (measured by externalizing behaviors/school problems *T*-scores on the CBCL/6-18 or the BASC-2).

2. Mono-rater/multi-construct validity was expected to be demonstrated via

  a. significant correlations between the parent ADHD-FX ratings with the parent-rated ADHD symptom count (measured by the Disruptive Behavior Disorder [DBD] Rating Scale; Pelham, Evans, Gnagy, & Greenslade, 1992] or the Child Symptom Inventory [CSI; Gadow & Sprafkin, 1997]), and

  b. significant correlations between the teacher ADHD-FX ratings with teacher-rated ADHD symptom count (measured by the DBD [Pelham et al., 1992] or CSI [Gadow & Sprafkin, 1997]).

3. Multi-rater/mono-construct validity was expected to be demonstrated via

  a. significant correlations between the teacher ADHD-FX with parent-rated home impairment (APQ Involvement subscale) and social competence/skills (CBCL/6-18/BASC), and

  b. significant correlations between the parent ADHD-FX with teacher-rated school externalizing behavior/school problems (CBCL/6-18/BASC-2).

4. Multi-rater/multi-construct validity was expected to be demonstrated via

  a. significant correlations between the parent ADHD-FX ratings with the teacher-rated ADHD symptom count (DBD/CSI), and

  b. significant correlations between the teacher ADHD-FX ratings with parent-rated ADHD symptom count (DBD/CSI).

5. Multi-method/multi-construct validity was expected to be demonstrated via

  a. significant correlations between the parent and teacher ADHD-FX ratings with the clinician-rated ADHD symptom count (measured by the DBD Interview [Pelham et al., 1992] or the Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children [K-SADS; Kaufman et al., 1997]), and

  b. significant correlations between the parent and teacher ADHD-FX ratings with the objectively assessed impairment (measured by the Working Memory Index (WMI) of the Wechsler Intelligence Scale for Children–Fourth Edition [WISC-IV; Wechsler, 2003]).

Finally, it was predicted that all subscales and the overall ADHD-FX would demonstrate divergent construct validity as evidenced by insignificant associations (i.e., correlations, *t* tests, or chi-squared tests depending on the scale of the measure) between ADHD-FX ratings and child and rater demographics. Insignificant associations between ADHD-FX ratings and child/rater demographics would suggest that responses on the ADHD-FX do not differ based on the child or rater's background.

Method

Participants

The current study included 67 school-aged children with ADHD and their primary caregiver who sought a comprehensive multi-modal, multi-informant assessment at one of two university-based ADHD clinics: the Hyperactivity, Attention, and Learning Problems (HALP) clinic at University of California, San Francisco (UCSF; n = 28) and Marquette University ADHD Clinic (n = 39). Descriptive statistics for children and parent demographic characteristics are shown in Table 1. Briefly, across both sites, children ranged in age from 5 to 15 years (M = 8.63, SD = 2.28) and were predominately male (70%). The ethnic backgrounds of participants represented in the current sample were fairly diverse; specifically, 57% were European American and 43% were non–European American. All child caregivers were invited to participate in the comprehensive assessment; however, a primary caregiver was self-assigned to evaluate their child's emotional and behavioral functioning and complete the battery of parent-report measures. Primary caregivers in the current study were mostly mothers (85%) who were married (70%) and completed at least a bachelor's degree (69%).

Table 1. Demographic Characteristics.

Parent demographics	
Evaluator, n(%)	
Biological mother	57 (85)
Biological father	7 (10)
Step-father	1 (1.5)
Adopted mother	1 (1.5)
Adopted father	1 (1.5)
Marital status, n (%)	
Married	47 (70)
Divorced	6 (9)
Separated	3 (5)
Single/never married	7 (10)
Other	4 (6)
Education, n (%)[a]	
Graduated high school/GED	7 (10)
Partial college/specialized training	13 (19)
Standard college graduate	21 (31)
Advanced Graduate degree	25 (37)
Child demographics	
Age, M (SD)	8.63 ± 2.28
Gender, n (%)	
Female	20 (30)
Male	47 (70)
Race	
White	38 (57)
Black	8 (12)
Hispanic	10 (15)
Biracial	4 (6)
Asian	3 (4)
Unknown	2 (3)

Number of siblings, n (%)[a]	
0	13 (19)
1-2	42 (63)
3-4	9 (13)
5 or more	2 (3)
ADHD diagnosis n (%)[a]	
Yes	47 (70)
ADHD, inattentive	20 (30)
ADHD, hyperactive-impulsive	3 (5)
ADHD, combined	24 (36)
Clinician rating of symptoms based on parent interview	
Inattentive symptoms	6.50 ± 2.00
Hyperactive-impulsive symptoms	3.26 ± 2.49
Comorbid diagnosis n (%)[a]	
Yes	26 (39)
No	32 (48)

Note. n = 67. GED = general educational development.
[a]Denotes missing values.

Procedure

Parents provided informed written consent as part of the standard clinic intake procedure agreeing that all information gathered during the assessment process could be used for research purposes; study procedures were approved by the institutional review boards at both universities. Comprehensive assessments were completed in university-based ADHD clinics by clinical psychology trainees (i.e., graduate students, predoctoral interns, postdoctoral fellows, and junior clinical psychologists) supervised by the site ADHD clinic director (i.e., a licensed clinical psychologist expert in childhood ADHD). As part of the assessment, primary caregivers responded to an unstructured interview aimed to gather information about the presenting problem, family and social functioning, and developmental and medical history. Primary caregivers also responded to a structured interview assessing the presence and severity of ADHD, oppositional defiant disorder (ODD), and conduct disorder (CD) symptom criteria based on the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000) or *DSM-5* (American Psychiatric Association, 2013). Based on the procedures of the two clinics, either the Parent Structured Interview for Disruptive Behavior Disorders (DBD; Pelham, 2002) or the Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children–Lifetime Version (K-SADS-PL; Kaufman et al., 1997) was used to determine symptom count and diagnosis. The primary caregiver also completed several measures assessing their child's emotional and behavioral functioning, as well as measures of parental/family functioning. Children responded to an unstructured interview and several self-report measures; children also completed a battery of psychoeducational testing and/or were observed in the classroom setting. Finally, the child's primary teacher responded to an unstructured interview assessing the child's emotional and behavioral functioning in the school setting and also completed several child behavior measures.

Diagnostic and subtype decisions were made by clinical psychology trainees and their supervisor. The presenting problem, parental responses on the structured interview, parent and teacher responses on

the measures, and behavioral observations of the child all were considered when making final clinical decisions regarding symptom severity. Symptoms were considered endorsed by the clinician if they received a rating of moderate (2) or severe (3) on the DBD Structured Interview (Pelham et al., 1992) or if they received a rating of threshold (3) on the K-SADS interview. See Table 1 for final clinician ratings of symptom count and diagnostic decisions.

Measures

The selection of measures with which to compare the ADHD-FX ratings was limited to questionnaires/tools given at both clinical sites. Fortunately, in addition to parent/teacher rating scales and clinical interviews assessing ADHD symptoms, both sites gave measures that can be used to derive common estimates along each ADHD-FX impairment domain and demonstrate adequate psychometric properties in English and Spanish. Specifically, home impairment can be captured by the parent-rated APQ Involvement subscale, which has demonstrated psychometric and cultural validity in Latino populations (Haack, Gerdes, Schneider, & Hurtado, 2011); social impairment can be captured by the parent-rated and teacher-rated CBCL/6-18 Social Competence *T*-score or BASC-II Social Skills Adaptive *T*-score, which are norm-referenced from large-scale standardization samples incorporating English- and Spanish-language versions of the measure (Achenbach & Rescorla, 2001; Reynolds & Kamphaus, 2004; Rubio-Stipec, Bird, Canino, & Gould, 1990); and academic impairment can be captured by the teacher-reported CBCL/6-18 Externalizing Behaviors or BASC-II School Problems subscale, as well as the objectively tested WMI from the WISC-IV (Wechsler, 2003).

Client demographic form
A client demographic form was completed by the primary caregiver to gather information, such as child age, sex, ethnicity, and parental education and marital status.

Disruptive Behavior Disorder (DBD) Rating Scale
The DBD Rating Scale (Pelham et al., 1992) is a 45-item parent and teacher-report measure of the presence and severity of *DSM-IV-TR* diagnostic symptom criteria for ADHD (Inattentive, Hyperactivity/Impulsive), ODD, and CD. Items are rated on a 4-point Likert-type scale ranging from 0 (*not at all present*) to 3 (*very much present*). Two scoring procedures are used for the measure, Symptom Count (categorical) and Symptom Severity (dimensional). Symptom Count scoring tallies the number of symptoms endorsed (if rated a "2" or "3") for each category; whereas, Symptom Severity scoring sums the items for each disorder of interest with higher numbers indicating greater severity. Previous research demonstrates adequate internal consistencies ranging from .68 to .96 for maternal reports of inattention, hyperactivity/impulsivity, ODD, and CD.

Child Symptom Inventory (CSI-4)
The CSI-4 (Gadow & Sprafkin, 2002; Gadow et al., 2004) is a rating scale designed to assess for emotional and behavioral disorders based on *DSM-IV-TR* or *DSM-V* (American Psychiatric Association, 2013) diagnostic criteria. For the purpose of the current study, parents and teacher versions were completed and only the items assessing symptoms of ADHD (inattentive, hyperactive/impulsive), ODD, and CD were administered. Parents and teachers rated each symptom on a 4-point Likert-type scale ranging from 0 (*never*) to 3 (*always*). Two scoring procedures are used for the measure, Symptom Count (categorical) and Symptom Severity (dimensional). Symptom Count scoring tallies the number of symptoms endorsed (if rated a "2" or "3") for each category; whereas, Symptom Severity scoring sums

the items for each disorder of interest; higher numbers indicating greater severity. Numerous studies indicate that the CSI-4 demonstrates adequate internal consistency, test–retest reliability, and convergent and discriminant validity in community-based normative and clinic-referred sample (Gadow et al., 2004).

Child Behavior Checklist for Ages 6 to 18 (CBCL/6-18)
The CBCL/6-18 (Achenbach & Rescorla, 2001) is a 113-item parent-report measure used to assess internalizing and externalizing problems and social competence in children and adolescents. Items are rated on a 3-point Likert-type scale from 0 (*not true*) to 2 (*very true*) to indicate how well each item describes their child's behavior over the past 6 months. The CBCL/6-18 produces *T*-scores for several domains of functioning, including Externalizing Behaviors and Social Competence, which were used in the current study. The CBCL/6-18 is a standardized measure that has demonstrated good psychometric properties in English and Spanish (Achenbach & Rescorla, 2001; Rubio-Stipec, Bird, Canino, & Gould, 1990).

Behavior Assessment System for Children–Second Edition (BASC-2)
The BASC-2 (Reynolds & Kamphaus, 2004) is a comprehensive multi-dimensional rating scale designed to assess emotional and behavioral functioning and school problems of children and adolescents. The Parent Rating Scale (PRS) and Teacher Rating Scale (TRS) of the BASC-2 consists of 138 to 148 items, respectively, and items are rated on a 4-point Likert-type scale ranging from 0 (*never*) to 3 (*almost always*). The BASC-PRS yields several composite *T*-scores, such as the School Problems composite score and the Social Skills adaptive score, which were examined in the current study. This measure has demonstrated adequate reliability and validity in standardization samples incorporating English- and Spanish-language versions of the measure (Reynolds & Kamphaus, 2004).

Alabama Parenting Questionnaire (APQ)
The APQ (Shelton et al., 1996) is a 42-item parent-report measure used to assess parenting practices. Items are rated on a 5-point Likert-type scale ranging from *never* to *always* and are summed to create five major subscales, including Involvement, which captures a parent's positive interaction and engagement in their child's life; higher scores in each subscale is indicative of higher incidence of that parenting behavior. Shelton and colleagues (1996) have demonstrated adequate reliability and validity for most subscales of the measure. The APQ has been translated into Spanish and examined for psychometric properties; Involvement was the only subscale to demonstrate adequate reliability, construct validity, *and* cultural validity with Latino families (Haack et al., 2011). Thus, involvement was the sole APQ subscale examined in the current study; it demonstrated comparable internal consistency as documented in existing APQ psychometric studies ($\alpha = .64$; Dadds, Maujean, & Fraser, 2003; Essau, Sasagawa, & Frick, 2006; Shelton et al., 1996)

Disruptive Behavior Disorder (DBD) Interview
The DBD Interview (Pelham et al., 1992) is a clinician-administered structured interview assessing *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) symptoms of ADHD, ODD, and CD within the context of the home, school, and other relevant settings. Parents and teachers were asked to determine whether problem behaviors occur in each situation and, if so, to rate the severity (0) not at all, (1) just a little, (2) pretty much, or (3) very much for each symptom of ADHD, ODD, and CD. Clinicians then provide each symptom with an overall

rating based on the primary caregivers' and teachers' report of severity within each setting. Symptoms that receive an overall rating of 2 or 3 are considered endorsed. Endorsed items were compared with diagnostic criteria and a diagnosis was given if the child met past or current diagnostic criteria.

Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS-PL)
The K-SADS-PL (Kaufman et al., 1997) is structured diagnostic interview aimed to assess current and past episodes of psychopathology in children and adolescents according to the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.; *DSM-III-R*; American Psychiatric Association, 1987) and *DSM-IV* criteria. The K-SADS-PL is comprised of screens and supplemental diagnostic assessments to evaluate 20 psychiatric diagnoses. Parents would respond to questions reflecting diagnostic criteria with either a 0 (*no information*), 1 (*not present*), 2 (*subthreshold*), and 3 (*threshold*). Items receiving a 3 = threshold are considered endorsed. Endorsed items were compared to diagnostic criteria and a diagnosis was given if the child met current diagnostic criteria.

WISC-IV Working Memory Intex (WMI)
The WISC-IV WMI (Wechsler, 2003) includes the Digit Span and Letter-Number Sequencing subtests and assesses the child's ability to hold information in short-term memory, concentrate, and manipulate that information to produce a result. It reflects higher order thinking/learning often impaired in children with ADHD, such as concentration, planning, ordering, and cognitive flexibility (Wechsler, 2003). The English version of the WISC-IV was used in the current investigation, as all children were fluent and educated in English.

Data Analysis

Cronbach's test of internal consistency and bivariate correlations were examined in IBM SPSS version 20 (SPSS, 2011) to determine the reliability and construct validity of the ADHD-FX. Clinic site was examined as a potential covariate to determine if demographic data and analyses should be presented across sites or combined. Results did not appear to differ between sites; thus, demographic data and analyses are presented for the combined sample across sites.

Results

Psychometric Properties

Reliability
We computed the reliability of each subscale of the ADHD-FX in terms of internal consistency (i.e., Cronbach's α values). All subscales and the overall ADHD-FX revealed good internal consistency levels on both parent and teacher rating forms with Cronbach's alpha values >.70, ranging from .89 to .95 (see Table 2).

Table 2. ADHD-FX Item Severity and Frequency Breakdown of Items Endorsed >1 on 3-Point Scale.

	Item severity (0-3 scale)				Frequency of items endorsed per profile[a]				
	M	SD	α	95% CI	Minimum	25%	50%	75%	Maximum
Parent ADHD-FX Total[b]	1.41	.54	.95[c]	[.92, .98]	3.0	7.5	12.0	18.5	32.0
School[b]	1.28	.59	.92[c]	[.87, .93]	0.0	4.0	6.0	10.0	19.0
Peer[b]	1.18	.73	.92[c]	[.87, .93]	0.0	1.0	2.0	4.5	10.0
Home[b]	1.46	.58	.89[c]	[.83, .91]	0.0	2.0	6.0	10.0	13.0
Teacher ADHD-FX									
School[b]	1.28	.59	.92[c]	[.87, .94]	0.0	3.0	7.0	11.0	16.0
Peer[b]	1.12	.68	.91[c]	[.86, .94]	0.0	1.0	3.0	5.0	10.0

Note. n = 67; CI = 95% confidence interval.

[a]Frequency breakdown represents the minimum and maximum number of items endorsed per profile, as well as the number of items separating at the 25% lower, 50% median, and 75% upper quartiles of the sample.

[b]Denotes missing values.

[c]Indicates adequate reliability with α ≥ .70.

Construct validity

To determine the convergent construct validity, we examined correlations of each subscale and the overall ADHD-FX between raters and theoretically related measures of ADHD impairment and symptomatology (see Table 4). As seen in Table 3, the parent and teacher ADHD-FX ratings were significantly correlated for school and peer subscales; the Home subscale of the parent ADHD-FX did not correlate with teacher ADHD-FX ratings.

Table 3. Correlations for the Parent-Report ADHD-FX With the Teacher-Report ADHD-FX (*n* = 67).

	Teacher ADHD- FX total/school	Teacher ADHD-FX peer
Parent ADHD-FX total[a]	0.21	0.34*
Parent ADHD-FX home[a]	0.04	0.15
Parent ADHD-FX school[a]	0.37*	0.48**
Parent ADHD-FX peer[a]	0.44**	0.56**

[a]Denotes missing values.

*p ≤ .05. **p ≤ .01.

Table 4. Convergent Construct Validity.

	Convergent construct validity										
	r^a	r^b	r^c	r^d	r^e	r^f	r^g	r^h	r^i	r^j	r^k
Parent-rated impairment											
ADHD-FX total	−.46*	−.39*	.03	.09	.50**	.58**	−.24	−.00	.26	.26	.03
ADHD-FX home	−.39**	−.33*	.02	.02	.50**	.63**	−.27	−.08	.30*	.25	.02
ADHD-FX school	−.41*	−.39*	−.01	.12	.50**	.43**	−.18	.07	.24	.29	−.01
ADHD-FX peer	−.51**	−.39*	.10	.14	.33*	.54**	−.25	.07	.16	.33*	.10
Teacher-rated impairment											
ADHD-FX school/total	−.09	−.42**	−.39**	.80**	.09	−.01	.58**	.58**	.34*	.49**	−.39**
ADHD-FX peer	−.20	−.46**	−.29	.77**	.07	.11	.35*	.52**	.33*	.51**	−.28

Note. n = 67; APQ = Alabama Parenting Questionnaire; BASC = Behavioral Assessment System for Children; CBCL = Child Behavior Checklist; DBD = Disruptive Behavior Disorders; CSI = Child Symptom Inventory; K-SADS-PL = Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children–Lifetime Version; WISC-IV = Wechsler Intelligence Scale for Children–Fourth Edition.

[a]Correlations (*r*) with Involvement subscale on the APQ (Shelton, Frick, & Wootton, 1996).

[b]Correlations (*r*) with parent-reported social competence/skills on the BASC-2/CBCL 6/18 (Achenbach & Rescorla, 2001; Reynolds & Kamphaus, 2004).

[c]Correlations (*r*) with teacher- reported social competence/skills on the BASC-2/CBCL 6/18 (Achenbach & Rescorla, 2001; Reynolds & Kamphaus, 2004).

[d]Correlations (*r*) with teacher-reported externalizing behaviors/school problems on the BASC-2/CBCL 6/18 (Achenbach & Rescorla, 2001; Reynolds & Kamphaus, 2004).

[e]Correlations (*r*) with parent-reported inattention symptoms on the DBD Rating Scale/CSI-4 (Gadow & Sprafkin, 2002; Gadow et al., 2004; Pelham, Evans, Gnagy, & Greenslade, 1992).

[f]Correlations (*r*) with parent-reported hyperactive/impulsive symptoms on the DBD Rating Scale/CSI-4 (Gadow & Sprafkin, 2002; Gadow et al., 2004; Pelham et al., 1992).

[g]Correlations (*r*) with teacher-reported inattention symptoms on the DBD Rating Scale/CSI-4 (Gadow & Sprafkin, 2002; Gadow et al., 2004; Pelham et al., 1992).

[h]Correlations (*r*) with teacher-reported hyperactive/impulsive symptoms on the DBD Rating Scale/CSI-4 (Gadow & Sprafkin, 2002; Gadow et al., 2004; Pelham et al., 1992).

[i]Correlations (*r*) with clinician rating of inattentive symptoms based on parent-report on the DBD structured interview/K-SADS-PL (Kaufman et al., 1997; Pelham et al., 1992).

[j]Correlations (*r*) with clinician rating of hyperactive/impulsive symptoms based on parent-report on the DBD structured interview/K-SADS-PL (Kaufman et al., 1997; Pelham et al., 1992).

[k]Correlations (*r*) with Working Memory Index of the WISC-IV.

p ≤ .05. **p* ≤ .01.

Mono-rater/mono-construct validity was demonstrated for each subscale and the overall ADHD-FX via (a) significant correlations between the parent ADHD-FX ratings with home impairment (measured by the APQ Involvement subscale [Shelton et al., 1996]) and parent-rated social competence (measured by social competence/skills *T*-scores on the CBCL/6-18 [Achenbach & Rescorla, 2001] or the BASC-2 [Reynolds & Kamphaus, 2004]), and (b) between the teacher ADHD-FX ratings with teacher-rated school behavior impairment (measured by externalizing behavior/school problems *T*-scores on the CBCL/6-18 [Achenbach & Rescorla, 2001] or the BASC-2 [Reynolds & Kamphaus, 2004]).

Mono-rater/multi-construct validity was demonstrated for each subscale and the overall ADHD-FX via (a) significant correlations between the parent ADHD-FX ratings with the parent-rated ADHD symptom count (measured by the DBD [Pelham et al., 1992] or CSI [Gadow & Sprafkin, 1997]), and (b) the teacher ADHD-FX ratings with teacher-rated ADHD symptom count (measured by the DBD [Pelham et al., 1992] or CSI [Gadow & Sprafkin, 1997]).

Multi-rater/mono-construct validity was partially demonstrated. All subscales and the total parent-rated ADHD-FX significantly correlated with teacher-rated social competence (measured by social competence/skills *T*-scores on the CBCL/6-18 [Achenbach & Rescorla, 2001] or the BASC-2 [Reynolds & Kamphaus, 2004]) but not with teacher-rated school behavior problems (measured by externalizing behavior/school problems *T*-scores on the CBCL/6-18 [Achenbach & Rescorla, 2001] or the BASC-2 [Reynolds & Kamphaus, 2004]). Both subscales of the teacher ADHD-FX correlated with parent-rated social competence (measured by social competence/skills *T*-scores on the CBCL/6-18 [Achenbach & Rescorla, 2001] or the BASC [Reynolds & Kamphaus, 2004]) but not with parent-rated home impairment (measured by the APQ Involvement subscale [Shelton et al., 1996]).

Multi-rater/multi-construct validity was not demonstrated. No significant correlations emerged between the parent ADHD-FX ratings with (a) the teacher-rated ADHD symptom count (measured by the DBD [Pelham et al., 1992] or CSI [Gadow & Sprafkin, 1997]), or with (b) the teacher ADHD-FX ratings with parent-rated ADHD symptom count (measured by the DBD [Pelham et al., 1992] or CSI [Gadow & Sprafkin, 1997]).

Multi-method/multi-construct validity was demonstrated for each subscale and the overall ADHD-FX via significant correlations between the parent and teacher ADHD-FX ratings with the clinician-rated ADHD symptom count (measured by the DBD [Pelham et al., 1992] or K-SADS [Kaufman et al., 1997]). Teacher ADHD-FX school ratings also significantly correlated with objectively assessed working memory (measured by the WISC-IV WMI [Wechsler, 2003]). The 95% confidence intervals for significant convergent construct correlation coefficients range from (.002-.155) to (.043-.065).

Divergent construct validity
To determine the divergent construct validity, we examined correlations of each subscale and the overall ADHD-FX with theoretically unrelated measures of child and parent demographics (see Table 5). Divergent construct validity was demonstrated for each subscale and the overall ADHD-FX via insignificant correlations between the parent and teacher ADHD-FX ratings and all child and parent demographic factors with one exception: parent ratings of the home ADHD-FX subscale were negatively correlated with child age ($r = -.32$, $p < .05$).

Table 5. Divergent Construct Validity (*n* = 67).

	Child age (r)[a]	Child gender (t)[b]	Child ethnicity (F)[c]	Evaluator (F)[d]	Parent education (F)[e]	Parent marital status (F)[f]	Site (UCSF/ MU) (t)[g]
Parent-rated impairment							
ADHD-FX total[h]	−.23	−0.75	0.24	1.53	1.34	2.16	−0.53
ADHD-FX home[h]	−.32*	−0.87	0.09	0.94	1.65	1.98	−0.55
ADHD-FX school[h]	−.05	−0.40	0.30	1.26	1.18	1.91	−0.22
ADHD-FX peer[h]	−.23	−0.44	0.20	0.71	1.19	1.12	−0.46
Parent-rated symptom severity							
Inattention[h]	.24	0.31	0.55	1.13	0.15	1.69	−1.68
Hyperactivity/impulsivity[h]	−.38*	−0.94	2.05	1.42	1.60	0.94	−3.19
Teacher-rated impairment							
ADHD-FX school/total[h]	−.14	1.07	0.87	0.08	1.24	1.27	−0.92
ADHD-FX peer[h]	−.18	0.68	0.73	0.17	0.80	1.84	−0.71
Teacher-rated symptom severity							
Inattention[h]	.14	0.71	0.68	0.30	1.46	1.74	0.28
Hyperactivity/impulsivity[h]	−.15	0.84	0.54	0.46	0.85	2.70	−0.24
Clinician-rated symptom count							
Inattention[h]	.21	−0.74	1.15	0.79	0.21	0.37	2.52
Hyperactivity/impulsivity[h]	−.41**	1.10	0.95	0.63	1.23	1.22	−0.40

Note. UCSF = University of California San Francico; MU = Marquette University

[a]Correlations (r) with child age.

[b]Independent samples t test (t) with child gender.

[c]One-way ANOVA (F) with child ethnicity.

[d]One-way ANOVA (F) with evaluator.

[e]One-way ANOVA (F) with parent education.

[f]One-way ANOVA (F) with parent marital status. gIndependent samples t test (t) with site (MU/UCSF). hDenotes missing values.

*p ≤ .05. **p ≤ .01.

Discussion

Overall, both the parent and teacher ADHD-FX rating scales demonstrated good psychometric properties in a dual-site clinical sample. Specifically, as predicted, all subscales and the overall ADHD-FX demonstrated adequate reliability with high levels of internal consistency for both parent and teacher ratings scales. In addition, all subscales and the overall parent and teacher ADHD-FX demonstrated adequate convergent construct validity (specifically, mono-rater/mono-construct validity, mono-rater/multi-construct validity, multi-rater/mono-construct validity, and multi-method/multi-construct validity) by significantly correlating with the majority of theoretically related measures of parent and teacher reports of functional impairment and symptomatology, clinician ratings of symptomatology, and objectively tested impairment (i.e., WMI). Few exceptions occurred; most notably, parent ratings of home impairment (i.e., from the ADHD-FX Home subscale and APQ Involvement subscale) were not significantly associated with teacher ratings of impairment or symptomatology; however, this likely reflects the notion that parents and teachers are more aware of school behavior than teachers are of home behavior.

Contrary to predictions, multi-rater/multi-construct validity was not demonstrated, as no significant correlations emerged between the parent ADHD-FX ratings with the teacher-rated ADHD symptomatology *OR* between the teacher ADHD-FX ratings with parent-rated ADHD symptomatology. This is not completely unsurprising, given the traditionally low associations between parent and teacher ratings of ADHD symptomatology (Wolraich et al., 2004), suggesting that the lack of multi-rater/multi-construct validity may be less reflective of the ADHD-FX and more reflective of typical discrepancy in parent and teacher reports of child behavior. To overcome the common discrepancy between teacher and parent reports of ADHD, it appears warranted to supplement rating scales (such as the ADHD-FX) with complimentary assessment methods (e.g., clinician ratings of symptom count, objectively tested working memory), especially in context of the current study results demonstrating multi-method/multi-construct validity for the ADHD-FX. As predicted, the ADHD-FX emerged with good divergent construct validity, as demonstrated by a lack of association between ADHD-FX ratings and any child or parent demographic factors with one exception: Parent ratings of home impairment on the ADHD-FX were negatively correlated with child age, suggesting parents perceive less home impairment as their child matures. Interestingly, parent and clinician reports of symptomatology (particularly ratings of hyperactivity-impulsivity) also emerged related to child age. Findings support previous research suggesting that hyperactive-impulsive symptoms lessen with age and functional impairment (with the exception of home impairment) appears more stable throughout the life span (Miller et al., 2012; Willcutt et al., 2012).

In sum, results of the current study support the only other existing ADHD-FX validation study to-date, which was completed with one specific cultural group deemed at risk for problem-recognition barriers: Spanish-speaking Latino parents (Haack & Gerdes, 2017). Specifically, in both the current and the original validation study, the overall ADHD-FX and all subscales demonstrated good levels of internal consistency (α ranging from .88-.92) and convergent construct validity by significantly correlating with theoretically related measures. Taken together, results from these studies suggest that the ADHD-FX is a psychometrically sound measure for parents and teachers to rate youth in community and clinical settings (Haack & Gerdes, 2017; Haack et al., 2016).

Limitations and Future Directions

Several limitations of the current study should be noted. The most notable limitation is that of the relatively modest sample size for the initial clinical validation process. With a sample size of 67, the researchers were able to propose initial psychometric properties for a clinical sample; however, future validation with larger samples representing various cultural groups is a critical next step to ensure cross-cultural validity of the ADHD-FX beyond the Latino population. In addition, children in the current study were receiving a comprehensive ADHD assessment from two university-based clinics (one in the Midwest and one in the West); thus, results are only generalizable to children in similar settings. Psychometric properties should be examined in other, diverse clinical settings, such as community-based, school-based, and/or hospital-based clinics in other geographically diverse areas. Finally, the mean ADHD-FX ratings may appear low in the context of a clinical sample; however, the frequency of endorsed items (i.e., minimum of three rated as affecting the child "quite a bit" or "a lot") appears to more appropriately reflect the heterogeneous profile of functional impairment for children with ADHD (Faraone et al., 2015). Thus, although not every child with ADHD will demonstrate impairment in every domain, it appears that even a few endorsed impairment items indicate clinical concern; however, future research employing a clinical and control group is needed to determine ADHD-FX clinically significant cut-offs and diagnostic utility.

Clinical Implications

Recent calls for culturally sensitive assessment measures are reflected in publications spanning the broad field of psychology (e.g., American Psychological Association's [2003] Multicultural Guidelines for Education, Research, and Practice, multiculturally sensitive practitioners) as well as ADHD-specific resources (e.g., Haack & Gerdes, 2011; Lee & Hymphreys, 2011). The ADHD-FX appears to be a culturally sensitive and psychometrically sound measure for parents and teachers to rate child functioning at school, at home, and with peers. Up until this point, the culturally sensitive method for assessing school, home, and social impairment was administration of multiple questionnaires assessing the various domains (Haack & Gerdes, 2011); utilization of the ADHD-FX in lieu of multiple questionnaires may reduce fatigue on the raters and increase efficiency of the researchers/clinicians. In addition, examination of specific endorsed items from the ADHD-FX domains may be beneficial for guiding treatment planning, goal setting, and progress monitoring. For example, if the item "Doesn't effectively work with peers in a group" is endorsed as affecting the child "quite a bit" or "a lot," it may be beneficial to create a corresponding daily report card goal to target in treatment, such as "effectively works with peers during grouptime."

Conclusion

The current study was able to demonstrate good psychometric properties for the parent and teacher ADHD-FX rating scale, a measure designed to assess functional impairment related to ADHD (i.e., difficulties with academic achievement, social competence, and familial relationships). Although the ADHD-FX originally was developed for a specific at-risk population, the universal nature of functional impairment and strong psychometric properties demonstrated by the ADHD-FX in the current study support its potential use with a broader range of clients than only Spanish-speaking Latinos. In sum, the ADHD-FX appears to be an efficient, reliable, and valid parent- and teacher-report measure

providing ratings for the three domains of impairment (i.e., academic, social, and familial impairment) most commonly associated with childhood ADHD. Utilization of efficient and culturally appropriate assessment measures for children across cultures, such as the ADHD-FX, can help improve accuracy of ADHD assessments and thus reduce mental health disparities for at-risk and underserved populations in our country.

Declaration of Conflicting Interests

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References

Achenbach, T. M., Rescorla, L. A. (2001). Manual for the ASEBA school-age forms & profiles. Burlington: Research Center for Children, Youth, & Families, University of Vermont.
American Academy of Pediatrics, Subcommittee on Attention-Deficit/Hyperactivity Disorder, & Steering Committee on Quality Improvement and Management . (2011). ADHD: Clinical practice guideline for the diagnosis, evaluation and treatment of attention deficit/hyperactivity disorder in children and adolescents. Pediatrics, 128, 1007-1022.
American Psychiatric Association . (1987). Diagnostic and statistical manual of mental disorders (3rd ed., Rev.). Washington, DC: Author.
American Psychiatric Association . (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.
American Psychiatric Association . (2000). Diagnostic and statistical manual of mental disorders (4th ed., text rev.). Washington, DC: Author.
American Psychiatric Association . (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Arlington, VA: American Psychiatric Publishing.
American Psychological Association . (2003). Guidelines on multicultural education, training, research, practice, and organizational change for psychologists. American Psychologist, 58, 377-402. doi:10.1037/0003-066X.58.5.377
Bauermeister, J. J., Matos, M., Reina, G., Salas, C. C., Martinez, J. V., Cumba, E., Barkley, R. (2005). Comparison of the DSM-IV combined and inattentive types of ADHD in a school-based sample of Latino/Hispanic children. Journal of Child Psychology and Psychiatry, 46, 166-179.
Calzada, E. J., Fernandez, Y., Cortes, D. E. (2010). Incorporating the cultural value of respeto into a framework of Latino parenting. Cultural Diversity and Ethnic Minority Psychology, 16, 77.
Dadds, M. R., Maujean, A., Fraser, J. A. (2003). Parenting and conduct problems in children: Australian data and psychometric properties of the Alabama Parenting Questionnaire. Australian Psychologist, 38, 238-241. doi:10.1080/00050060310001707267
Essau, C.A., Sasagawa, S., Frick, P.J. (2006). Psychometric properties of the Alabama Parenting Questionnaire. Journal of Child and Family Studies, 15, 597-616.

Faraone, S. V., Asherson, P., Banaschewski, T., Biederman, J., Buitelaar, J. K., Ramos-Quiroga, J. A., . . . Franke, B. (2015). Attention-deficit/hyperactivity disorder. Nature Reviews Disease Primers, 1, Article 15020.

Faraone, S. V., Sergeant, J., Gillberg, C., Biederman, J. (2003). The worldwide prevalence of ADHD: Is it an American condition? World Psychiatry, 2, 104-113.

Gadow, K.D., Drabick, D.A.G., Loney, J., Sprafkin, J., Salisbury, H., Azizian, A., Schwartz, J. (2004). Comparison of ADHD symptom subtypes as source-specific syndromes. Journal of Child Psychology and Psychiatry, 45, 1135-1149.

Gadow, K. D., Sprafkin, J. (1997). ADHD Symptom Checklist-4 manual. Stony Brook, NY: Checkmate Plus.

Gadow, K.D., Sprafkin, J. (2002). Childhood Symptom Inventory-4 screening and norms manual. Stony Brook, NY: Checkmate Plus.

Gathje, R. A., Lewandowski, L. J., Gordon, M. (2008). The role of impairment in the diagnosis of ADHD. Journal of Attention Disorders, 11, 529-537. doi:10.1177/1087054707314028

Gerdes, A. C., Lawton, K. E., Haack, L. M., Hurtado, G. D. (2013). Assessing ADHD in Latino families: Evidence for moving beyond symptomatology. Journal of Attention Disorders, 17, 128-140.

Gordon, M., Antshel, K., Faraone, S., Barkley, R., Lewandowski, L., Hudziak, J. J., . . . Cunningham, C. (2006). Symptoms versus impairment the case for respecting DSM-IV's criterion D. Journal of Attention Disorders, 9, 465-475. doi:10.1177/1087054705283881

Haack, L. M., Gerdes, A. C. (2011). Functional impairment in Latino children with ADHD: Implications for culturally-appropriate conceptualization and measurement. Clinical Child and Family Psychology Review, 14, 318-328.

Haack, L. M., Gerdes, A. C. (2017). Culturally appropriate assessment of functional impairment in diverse children validation of the ADHD-FX Scale with an at-risk community sample. Journal of Attention Disorders, 21, 913-920.

Haack, L. M., Gerdes, A. C., Lawton, K. E., Schneider, B. W. (2016). Understanding and measuring functional impairment in diverse children with ADHD: Development of the ADHD-FX Scale with an at-risk, community sample. Journal of Attention Disorders, 20, 487-500. doi:10.1177/1087054714527791

Haack, L. M., Gerdes, A. C., Schneider, B. W., Hurtado, G. D. (2011). Advancing our knowledge of ADHD in Latino children: Psychometric and cultural properties of Spanish-versions of parental/family functioning measures. Journal of Abnormal Child Psychology, 39(1), 33-43. doi:10.1007/s10802-010-9441-y

Kaufman, J., Birmaher, B., Brent, D., Rao, U. M. A., Flynn, C., Moreci, P., . . . Ryan, N. (1997). Schedule for affective disorders and schizophrenia for school-age children-present and lifetime version (K-SADS-PL): Initial reliability and validity data. Journal of the American Academy of Child & Adolescent Psychiatry, 36, 980-988.

Kendall, T., Taylor, E., Perez, A., Taylor, C. (2008). Guidelines: diagnosis and management of attention-deficit/hyperactivity disorder in children, young people, and adults: summary of NICE guidance. British Medical Journal, 337, 751-753.

Lee, S. S., Hymphreys, K. L. (2011). Assessment of attention deficit hyperactivity disorder in young children. In Evans, S. W., Hoza, B. (Eds.), Treating attention deficit hyperactivity disorder (pp. 2-24). Kingston, NJ: Civic Research Institute.

Miller, M., Ho, J., Hinshaw, S. P. (2012). Executive functions in girls with ADHD followed prospectively into young adulthood. Neuropsychology, 26, 278-287. doi:10.1037/a0027792

Pelham, W. E. (2002). Attention deficit hyperactivity disorder: Diagnosis, assessment, nature, etiology, and treatment. Unpublished manuscript. Buffalo: State University of New York.

Pelham, W. E., Evans, S. W., Gnagy, E. M., Greenslade, K. E. (1992). Teacher ratings of DSM-III-R symptoms for the disruptive behavior disorders: Prevalence, factor analyses, and conditional probabilities in a special education sample. School Psychology Review, 21, 285-299.

Pelham, W. E., Fabiano, G., Massetti, G. (2005). Evidence-based assessment of attention deficit hyperactivity disorder in children and adolescents. Journal of Clinical Child and Adolescent Psychology, 34, 449-476.

Reynolds, C. R., Kamphaus, R. W. (2004). BASC-2: Behavior Assessment System for Children–Second Edition: Manual. Circle Pines, MN: AGS Printing.

Rodriguez, N., Mira, C. B., Paez, N. D., Myers, H. F. (2007). Exploring the complexities of familism and acculturation: Central constructs for people of Mexican origin. American Journal of Community Psychology, 39, 61-77.

Rothe, E. M. (2005). Considering cultural diversity in the management of ADHD in Hispanic patients. Journal of the National Medical Association, 91, 175-235.

Rubio-Stipec, M., Bird, H., Canino, G., Gould, M. (1990). The internal consistency and concurrent validity of a Spanish translation of the Child Behavior Checklist. Journal of Abnormal Child Psychology, 18, 393-406. doi:10.1007/BF00917642

Shelton, K. K., Frick, P. J., Wootton, J. (1996). Assessment of parenting practices in families of elementary school-age children. Journal of Clinical Child Psychology, 25, 317-329. doi:10.1207/s15374424jccp2503_8

SPSS, Inc . (2011). SPSS for Mac, Rel. 20.0. Chicago, IL:. Available from http://www.spss.com

Wechsler, D. (2003). Wechsler Intelligence Scale for Children–Fourth Edition (WISC-IV). San Antonio, TX: The Psychological Corporation.

Willcutt, E. G. (2012). The prevalence of DSM-IV attention-deficit/hyperactivity disorder: A meta-analytic review. Neurotherapeutics, 9, 490-499.

Willcutt, E. G., Nigg, J. T., Pennington, B. F., Solanto, M. V., Rohde, L. A., Tannock, R., . . . Lahey, B. B. (2012). Validity of DSM-IV attention deficit/hyperactivity disorder symptom dimensions and subtypes. Journal of Abnormal Psychology, 121, 991-1010. doi:10.1037/a0027347

Wolraich, M., Lambert, E. W., Bickman, L., Simmons, T., Doffing, M. A., Worley, K. A. (2004). Assessing the impact of parent and teacher agreement on diagnosing attention-deficit hyperactivity disorder. Journal of Developmental & Behavioral Pediatrics, 25, 41-47.