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Adjustment Scales for Children and Adolescents: Factorial Validity Generalization with Hispanic/Latino Youths

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Abstract

Replication of the Adjustment Scales for Children and Adolescents (ASCA) core syndrome factor structure with a sample of 124 randomly selected Hispanic/Latino youths is reported. The six ASCA core syndromes produced the identical two-factor solution observed in other samples. Principal-axis exploratory factor analysis using multiple factor extraction criteria and varimax, direct oblimin, and promax rotations produced nearly identical factor structure coefficients. Consistent with earlier studies, the ASCA was observed to measure two independent dimensions of youth psychopathology (Overactivity and Underactivity) that are similar to the conduct problems/externalizing and withdrawal/internalizing dimensions typically found in the child psychopathology assessment literature.

Keywords

Adjustment Scales for Children and Adolescents, validity generalization, factor analysis, Hispanics, psychopathology assessment

Assessment and understanding child and adolescent psychopathology has been greatly improved by the introduction and development of standardized objective assessment methods with nationally representative standardization samples (McDermott, 1994; Reynolds & Kamphaus, 1992, 2004). However, the Standards for Educational and Psychological Testing (American Educational Research Association [AERA], American Psychological Association [APA], and the National Council on Measurement in Education [NCME], 1999) cautions psychologists' specific use of assessment instruments not adequately validated with various subgroups within the overall population. Furthermore, the Individuals with Disabilities Education Improvement Act of 2004 (Public Law 108-446, 2004) continues "the longstanding requirement that procedures used for the evaluation and placement of children with disabilities not be discriminatory on racial or cultural basis" (p. 32). Padilla

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(2004) also noted important concerns regarding research on psychological assessment instruments for use with specific racial/ethnic subgroups, including equivalent reliability and validity of instruments as well as equivalent factor structures. Racial and ethnic subgroups within the population are frequently examined for differential reliability and validity of test scores to determine potential bias and nondiscriminatory assessment (AERA, APA, and NCME, 1999), particularly within the cognitive abilities domain (Canivez & Watkins, 1999; Edwards & Oakland, 2006; Kaufman, Kaufman, & McLean, 1995; Keith, Quirk, Schartzer, & Elliott, 1999; Konold & Canivez, in press; Kush et al., 2001). Such investigations of differential psychometric properties are also required within the domain of personality and psychopathology (e.g., Barrett & Eysenck, 1984; Cooke, Kosson, & Michie, 2001; Van de Vijver & Leung, 1997).

The Adjustment Scales for Children and Adolescents (ASCA; McDermott, Marston, & Stott, 1993) is a nationally standardized, teacher-report measure of child and adolescent psychopathology for individuals between 5 and 17 years of age with considerable empirical support. McDermott (1993, 1994) indicated that 97 of the ASCA problem behavior items were best explained by an eight-factor model, with six factors (core syndromes) generalizing across sex, race/ethnicity, and age and two factors (supplemental syndromes) appropriate for specific subgroups within the population. McDermott (1994, p. 3) noted the six core syndromes are represented by Attention-Deficit/Hyperactive (ADH; "19 items indicating inattentive, attention-seeking, or restless behavior"), Solitary Aggressive-Provocative (SAP; "13 items depicting intimidating and overtly confrontative behavior"), Solitary Aggressive-Impulsive (SAI; " 9 items describing impulse-ridden or habit driven offense"), Oppositional Defiant (OPD; "12 items describing irascible, often covert, defiance and manipulation"), Diffident (DIF; "13 items distinguishing timid and fearful behavior"), and Avoidant (AVO; "10 items referring to unusually withdrawn, aloof, and uncommunicative behavior"). Supplementary syndromes are represented by the Delinquent (DEL; "10 items describing illicit solitary or group activity such as that involving alcohol, drugs, weapons, or property destruction") and Lethargic-Hypoactive (LEH; "11 items indicating loss of physical energy or motivation, apathy (perhaps depression), and slowness") syndromes (McDermott, 1994, p. 3).

Second-order principal factors analyses of the six core syndromes with the ASCA standardization sample produced a two-factor solution (Overactivity and Underactivity) similar to the two-dimensional model (conduct problem/externalizing vs. withdrawal/ internalizing) of child psychopathology frequently reported in the developmental psychopathology assessment literature (Achenbach, 1991; Achenbach & Edelbrock, 1983; Achenbach & Rescorla, 2001; Cicchetti & Toth, 1991; Kamphaus & Frick, 2005; Merrell, 1994, 2002, 2003; Quay, 1986; Reynolds & Kamphaus, 1992, 2004). However, unlike the above instruments, the ASCA Overactivity and Underactivity scales have consistently been observed to be independent (Canivez, 2004, 2006a, 2006b; Canivez & Beran, in press; Canivez & Bohan, 2006; McDermott, 1993, 1994). Core syndrome specificity estimates were also reported to be higher than error estimates and indicated that the separate core syndromes can be meaningfully interpreted beyond the global factors they represent (McDermott, 1994). McDermott also showed that the core syndrome and overall adjustment scales were invariant across child and adolescent, male and female, and White and non-White groups within the standardization sample.

Canivez (2004) replicated the factor structure of the ASCA core syndromes with a large independent convenience sample of 1,020 randomly selected students (but not nationally representative) from preschool through Grade 12. Varimax (orthogonal), direct oblimin (oblique), and promax (oblique) rotations produced virtually identical factor structure coefficients, and the factor correlation ($r = .08$) resulting from the promax rotation also confirmed the independence of the ASCA Overactivity and Underactivity scales. Similar but slightly higher core syndrome intercorrelations were obtained and internal consistency estimates were very near those from the standardization sample data.

Independent investigation of ASCA factorial validity generalization among ethnic minorities has thus far been limited to several samples of Native American Indians. Using the same methods

and procedures as Canivez (2004), Canivez (2006a) replicated results from the standardization sample (McDermott, 1993, 1994) and the large independent sample (Canivez, 2004) with a sample of children and adolescents of the Ojibwe tribe in north central Minnesota. In an identical study, Canivez and Bohan (2006) also replicated the factor structure of the ASCA with a sample of children and adolescents from the Yavapai Apache tribe in north central Arizona and coefficients of congruence indicated an excellent fit to the factor structure coefficients from both the ASCA standardization sample as well as the large independent sample (Canivez, 2004). Internal consistency estimates and subtest specificity estimates for the Ojibwe and Yavapai Apache samples were also similar and generally supportive. Factorial validity generalization of ASCA core syndromes has also been shown for two additional Native American Indian samples (Colorado River Indian Tribe and Cocopah Tribe) from Arizona (Canivez, 2006b).

Although McDermott (1994) reported ASCA factor structure invariance with the White and non-White groups within the ASCA standardization sample, investigation of the ASCA factor structure specifically within the Hispanic/Latino group was not reported. Specific application of the ASCA with Hispanic/Latino youths would be better supported if independent research with Hispanic/Latino samples replicated results from the ASCA standardization sample. At present, little is known about the potential differential reliability and factorial validity generalization of the ASCA for Hispanic/Latino youths.

Literature searches for studies examining factorial validity generalization of teacher-report behavior-rating scales such as the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992), Behavior Assessment System for Children–Second Edition (BASC-2; Reynolds & Kamphaus, 2004), Achenbach System of Empirically Based Assessment (ASEBA; Achenbach & Rescorla, 2001), Preschool and Kindergarten Behavior Scales (PKBS; Merrell, 1994), and Preschool and Kindergarten Behavior Scales–Second Edition (PKBS-2; Merrell, 2002) for Hispanic/Latino youths in the United States produced no studies. Although complete generalization of a behavior-rating scale cannot be based solely on factorial similarity (Van de Vijver & Poorttinga, 2005), this is one necessary and important feature. Interpretation of scales with ethnic minority children and adolescents requires empirical support for the latent structure of the measure. Padilla (2004) also specifically noted investigating factor structure equivalence of instruments.

The primary purpose of the present study was to further explore the factor structure generalization of the six ASCA core syndromes in an independent sample of Hispanic/Latino students. The present factor solution was compared to other ASCA samples (Canivez, 2004, 2006a, 2006b; Canivez & Bohan, 2006; McDermott, 1993, 1994) and ASCA core syndrome internal consistency and subtest specificity were assessed. Raw score differences between the present sample and Hispanics/Latinos within the ASCA standardization sample were also examined.

Method

Participants

Students were all classified as Hispanic/Latino based on parent designations of child race/ethnicity on official school enrollment forms. Of the 124 students, 53.2% were male and 46.8% were female. Students ranged in grade from kindergarten through Grade 8. The number of students rated within each grade level varied between 8 and 23. Most children were not disabled (82.3%); however, students enrolled in special education classes (15.3%) and an at-risk program (1.6%) were included. Specific disability classifications for individual students were not available. Multidisciplinary evaluation teams, using state and federal special education guidelines, independently classified students with disabilities in previous evaluations. The mean age of the

students was 8.86 years (*SD* = 2.61) with a range from 5 to 16. Although all students were indicated as English proficient, data on primary language of the parents/home indicated 91 (73.4%) spoke English while 33 (26.6%) spoke Spanish.

Data were provided by 66 teachers, and of these, 2 (3%) were male and 64 (97%) were female; 58 (87.8%) were Caucasian, 1 (1.5%) was Black/African American, 3 (4.5%) were Hispanic/Latino, 1 (1.2%) was Middle Eastern, 2 (3%) were Asian American, and 1 (1.5%) declined reporting their race/ethnicity. Teachers ranged in age from 22 to 63 years (*M* = 36.05, *SD* = 10.25) and ranged in teaching experience from 1 to 32 years (*M* = 9.98, *SD* = 9.10). Most teachers rated two students (84.8), but 9 (13.6%) rated one student and 1 (1.5%) rated three students.

Instrument

The ASCA (McDermott et al., 1993) is a teacher report, objective behavior-rating instrument designed for use with all noninstitutionalized youths ages 5 through 17 (Grades K through 12). The ASCA consists of 156 behavioral descriptions within 29 specific school situations where teachers may observe students' behaviors. Of the 156 items, 97 are problem behaviors singularly assigned to one of six core syndromes (ADH, SAP, SAI, OPD, DIF, and AVO) *or* two supplementary syndromes (DEL and LEH). The remaining items were either problem behaviors that did not load on reliable factors or were positive behaviors. Core syndromes are combined to form two composite indexes: Overactivity (ADH, SAP, SAI, and OPD syndromes) and Underactivity (DIF and AVO syndromes). Twenty-six ASCA items reflect positive behaviors and were observed in greater than 50% of the standardization sample; thus, ASCA is not merely a problem checklist.

Extensive evidence for ASCA score reliability and validity is presented in the ASCA manual (McDermott, 1994) and in the extent literature. Internal consistency estimates (Canivez, 2004, 2006a, 2006b; Canivez & Beran, in press; Canivez & Bohan, 2006; McDermott, 1993, 1994), short-term stability estimates (Canivez, Perry, & Weller, 2001; McDermott, 1993, 1994), and interrater agreement estimates (Canivez & Watkins, 2002; Canivez, Watkins, & Schaefer, 2002; McDermott, 1993, 1994; Watkins & Canivez, 1997) have supported various types of reliability for ASCA scores.

Evidence of ASCA scores convergent validity (Canivez & Bordenkircher, 2002; Canivez & Rains, 2002; McDermott, 1993, 1994), divergent validity (Canivez & Bordenkircher, 2002; Canivez, Neitzel, & Martin, 2005; Canivez & Rains, 2002; McDermott, 1993, 1994; McDermott et al., 1995), discriminative/discriminant validity (Canivez & Sprouls, 2005; McDermott, 1993, 1994; McDermott et al., 1995), and factorial validity and factorial validity generalization (Canivez, 2004, 2006a, 2006b; Canivez & Beran, in press; Canivez & Bohan, 2006; McDermott, 1993, 1994) have also been reported. In general, psychometric characteristics of the ASCA are acceptable and meet standards for both group and individual decision making (Canivez, 2001; Hills, 1981; Salvia & Ysseldyke, 1995).

Procedure

Classroom teachers of children and adolescents within a large suburban school district in a large Arizona metropolitan area were invited to participate by voluntarily completing ASCA rating forms on Hispanic/Latino students in their classroom. Teachers were requested to complete an ASCA rating form on two (one boy, one girl) randomly selected Hispanic/Latino students from their classroom. ASCA forms were distributed to those volunteering and later collected by a certified school psychologist and returned to the lead author for scoring and analysis. Trained undergraduate and graduate research assistants scored the ASCA rating forms according to the manual and entered raw score and *T* score data into the computer for further analyses.

Data Analyses

Unless otherwise noted, all statistical analyses were conducted using SPSS 13.0.0 for Macintosh OSX. ASCA core syndrome, supplementary syndrome, and overall adjustment scale raw scores from the present Arizona Hispanic/Latino sample were compared to the Hispanic/Latino group from the ASCA standardization sample ($n = 173$) using MANOVA and ANOVA. ANOVA analyses α levels were adjusted with Bonferroni correction for multiple significance tests. Partial η^2 provided effect size estimates in MANOVAs and ANOVAs and were interpreted using Cohen's (1988) criteria (.01 = small, .09 = medium, .25 = large). Mean differences were also examined using Cohen's *d* effect size estimate and benchmarks for interpretation of the absolute values of the resulting coefficients—where .20 = small, .50 = medium, and .80 = large effect sizes (Cohen, 1988).

The ASCA core syndrome *T* score correlation matrix was subjected to principal axis factor analysis with direct oblimin and promax rotations to investigate oblique solutions and varimax rotation to investigate the orthogonal solution. Confirmatory factor analysis (CFA) was not conducted because the Underactivity syndrome is measured by only two syndromes (DIF and AVO), and at least three indicators are recommended for identifying latent factors in CFA (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Kline, 2005; Thompson, 2004). Principal axis factor analysis was used due to the non-normal distributions of scores (Cudeck, 2000; Fabrigar et al., 1999; Tabachnick & Fidell, 2007), and it was also the method used in previous ASCA studies (Canivez, 2004, 2006a, 2006b; Canivez & Bohan, 2006; McDermott, 1993, 1994) where direct comparisons of invariance were made. Multiple criteria as recommended by Gorsuch (1983) were used to determine the number of factors to retain and included eigenvalues greater than 1 (Guttman, 1954), the scree test (Cattell, 1966), Horn's parallel analysis (HPA; Horn, 1965), Minimum Average Partials (MAP; Velicer, 1976; O'Connor, 2000), and theoretical consideration. HPA and MAP analyses are more accurate in determining the number of factors to retain (Frazier & Youngstrom, 2007; Thompson, 2004; Thompson & Daniel, 1996; Zwick & Velicer, 1986) and have been recommended as preferred criteria for factor extraction (Velicer, Eaton, & Fava, 2000). The scree test was used to visually determine the optimum number of factors to retain. Parallel analysis indicated meaningful factors when eigenvalues from the sample data were larger than those produced by random data containing the same number of participants and factors (Horn, 1965; Lautenschlager, 1989). Random data and resulting eigenvalues for parallel analyses were produced using the *Monte Carlo PCA for Parallel Analysis* computer program (Watkins, 2000) with 100 replications to provide stable eigenvalue estimates.

To examine ASCA factor invariance (how well the factor solution in the present study matched results from other ASCA samples), coefficients of congruence (Gorsuch, 1983; Harman, 1976) were calculated using the *Factorial Invariance* (Watkins, 2005) computer program. MacCallum, Widaman, Zhang, and Hong (1999) offered "guidelines to interpret the congruence coefficient: .98—1.00 = excellent, .92—.98 = good, .82—.92 = borderline, .68—.82 = poor, and below .68 = terrible" (p. 93).

Results

The MANOVA comparing ASCA core syndrome raw scores from the present Hispanic/Latino sample ($n = 124$) and Hispanic/Latino subjects within the ASCA standardization sample ($n = 173$) was not statistically significant: Wilks $\Lambda = .975$, $F(6, 290) = 1.22$, $p = .296$, partial $\eta^2 = .025$. MANOVA for the ASCA overall adjustment scale (OVR and UNR) raw scores also was not statistically significant: Wilks $\Lambda = .99$, $F(2, 294) = 1.54$, $p = .217$, partial $\eta^2 = .01$. ANOVA for ASCA DEL scale raw scores was not statistically significant, $F(1, 202)^1 = 0.58$, $p = .446$, partial

η^2 = .003. ANOVA for ASCA LEH scale raw scores was not statistically significant, $F(1, 188)$[1] = 0.05, p = .832, partial η^2 = .000. The Arizona Hispanic/Latino sample did not differ from the ASCA standardization Hispanic/Latino sample on any of the ASCA syndromes. Furthermore, all effect sizes were small (Cohen, 1988).[2]

Pearson product-moment correlations, varimax factor structure coefficients, promax factor structure coefficients, eigenvalues, and the percent of variance accounted for are presented in Table 1. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .688 and Bartlett's Test of Sphericity was 171.45, $p < .0001$. Initial communality estimates ranged from .10 to .61 (*Mdn* = .31). Two factors were extracted through principal axis factor analysis based on results from four of five factor selection criteria (eigenvalues > 1, the scree test, parallel analysis; see Figure 1) and theoretical consideration. MAP analysis indicated that only one factor should be extracted based on one factor producing the smallest average squared correlation of .057. Promax and direct oblimin rotations produced almost identical structure coefficients so only Promax coefficients are presented. Results of oblique rotation (Promax) for the two extracted factors indicated the ADH, SAP, SAI, and OPD core syndromes were strongly associated with the first factor (Overactivity) while the DIF and AVO core syndromes were strongly associated with the second factor (Underactivity). The correlation between Factor 1 (Overactivity) and Factor 2 (Underactivity) based on the promax rotation was .21, suggesting the independence of the Overactivity and Underactivity dimensions and viability of an orthogonal solution. Orthongonal (Varimax) rotation of the two factors also resulted in the ADH, SAP, SAI, and OPD core syndromes having strong associations with the first factor (Overactivity), while the DIF and AVO core syndromes had strong associations with the second factor (Underactivity).

Coefficients of congruence (Watkins, 2005) tested the factorial invariance of the present factor structure results to the total ASCA standardization sample (McDermott, 1993, 1994), the Hispanic/Latino subsample from the ASCA standardization sample (McDermott, 1993, 1994), a large independent sample (Canivez, 2004), and four different Native American Indian tribal samples (Canivez, 2006a, 2006b; Canivez & Bohan, 2006). Coefficients of congruence were generally "excellent" or "good" (MacCallum et al., 1999, p. 93) in matching the factorial results of previous ASCA studies (see Table 2). Only one congruence coefficient was in the "borderline" range.

Table 3 presents descriptive statistics for the ASCA core syndrome *T* scores, internal consistency estimates, and subtest specificity estimates. As expected from a random sample of students, mean ASCA scores and their standard deviations were close to population parameters for *T* scores ($M = 50$, $SD = 10$). Several scales deviated somewhat from normality. High internal consistency estimates were observed for the Overactivity syndrome (r_α = .89), and the Underactivity syndrome (r_α = .79) scores and internal consistency estimates for the ASCA core syndromes ranged from .51 to .82. Core syndrome subtest specificity estimates ranged from .13 to .68 with ADH, DIF, and AVO showing appreciable unique reliable variance (reliable variance not attributed to a common factor).

Discussion

Raw score comparisons between the present Hispanic/Latino sample and the ASCA standardization Hispanic sample resulted in no statistically significant differences, and mean differences were of small effect sizes (Cohen, 1988). Thus, the present sample appeared very like the Hispanic group from the ASCA standardization sample, and use of standardized *t* scores from the ASCA norms was appropriate for further factor analytic comparisons.

Results of present exploratory factor analyses were consistent with and replicated those obtained with the total ASCA standardization sample (McDermott, 1993, 1994), the large independent sample (Canivez, 2004), and four different samples of Native American Indians

Table 1. ASCA Core Syndrome *T* Score Correlations and Factor Structure Coefficients

	Correlations						Varimax Structure Coefficient[a]		Promax Structure Coefficient[a]	
ASCA Core Syndrome	ADH	SAP	SAI	OPD	DIF	AVO	OVR	UNR	OVR	UNR
ADH							**.53**	–.10	**.51**	–.04
SAP	.45						**.93**	.17	**.94**	.26
SAI	.31	.61					**.61**	.01	**.61**	.07
OPD	.31	.65	.37				**.67**	.19	**.69**	.25
DIF	–.12	.04	–.03	.04			–.08	**.60**	–.01	**.59**
AVO	.04	.19	.08	.22	.28		.14	**.48**	.19	**.49**
Eigenvalue							2.46	1.30		
Percent of variance:										
Common							40.99	21.63		
Cumulative							40.99	62.62		

Note: *N* = 124. ADH = Attention Deficit/Hyperactive; SAP = Solitary Aggressive (Provocative); SAI = Solitary Aggressive (Impulsive); OPD = Oppositional Defiant; DIF = Diffident; AVO = Avoidant; OVR = Overactivity; UNR = Underactivity.
[a]Factor coefficients ≥ .40 were considered salient and are in bold type. Promax rotated Factor 1 (OVR) and Factor 2 (UNR) *r* = .21. Direct oblimin structure coefficients are available upon request.

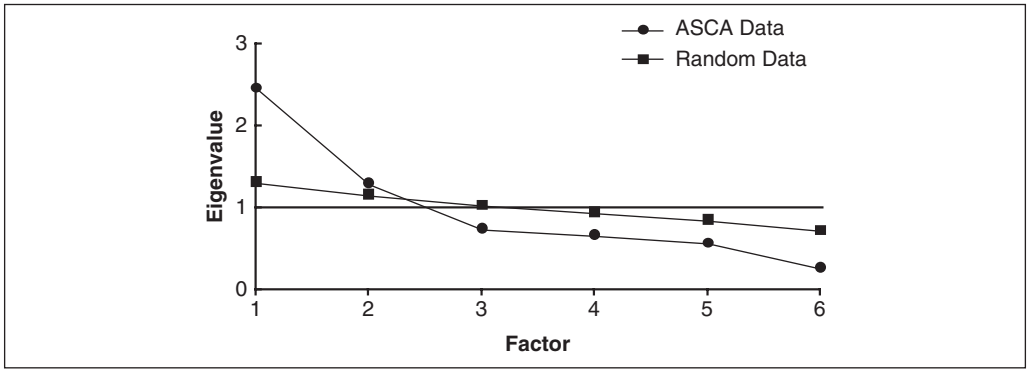

Figure 1. Scree Plots for ASCA Parallel Analysis

(Canivez, 2006a, 2006b; Canivez & Bohan, 2006). Although there were no studies of other behavior-rating scales factorial generalization with Hispanic/Latino youths for comparison, these results are similar to those of the Hispanic/Latino students within the ASCA standardization sample. The present results are also consistent with those recently obtained with a sample of Canadian youth (Canivez & Beran, in press).

Consistent with these previous ASCA EFA studies was the continued observation of the factorial independence of the ASCA Overactivity and Underactivity syndromes. The correlation between the two obliquely rotated (Promax) factors in the present sample was .21. The correlation between the Overactivity and Underactivity global syndromes *T* scores was .06, which also indicated independence of the global scales based on the standardized *T* scores obtained from the ASCA norms. Given the very low factor and global scale (OVR-UNR) correlations and the nearly identical factor structure coefficients obtained for both Varimax and Promax rotations, the

Table 2. Coefficients of Congruence for Varimax Structure Coefficients for Comparisons Between Present Hispanic/Latino Sample (N = 124) and Other ASCA Samples

	r_c	
Comparison Group	OVR	UNR
ASCA standardization sample (N = 1,400)[a]	.985	.954
ASCA standardization Hispanic sample (N = 173)[a]	.928	.942
Canivez (2004) independent sample (N = 1,020)	.986	.977
Canivez (2006a) Ojibwe sample (N = 183)	.987	.910
Canivez & Bohan (2006) Yavapai Apache sample (N = 229)	.984	.957
Canivez (2006b) Colorado River Indian sample (N = 154)	.986	.928
Canivez (2006b) Cocopah sample (N = 108)	.988	.942

Note: r_c = Coefficient of Congruence; OVR = Overactivity; UNR = Underactivity. Guidelines for interpreting congruence coefficients: .98 to 1.00 = excellent, .92 to .98 = good, .82 to .92 = borderline, .68 to .82 = poor, and below .68 = terrible (MacCallum et al., 1999, p. 93).
[a]ASCA standardization data were provided by Dr. Paul A. McDermott.

Table 3. *T* Score Descriptive Statistics, Core Syndrome Internal Consistency Reliability, and Subtest Specificity Estimates

	M	*SD*	Range	Skewness	Kurtosis	r_α	Specificity[a]
ADH	52.41	10.12	39 to 78	–0.09	–1.01	.82	**.58**
SAP	50.80	10.37	45 to 75	1.27	–0.30	.76	.15
SAI	50.84	8.84	47 to 75	1.92	1.80	.51	.13
OPD	49.25	9.45	43 to 80	1.06	–0.28	.72	.27
DIF	51.19	10.40	40 to 78	0.28	–0.98	.78	**.68**
AVO	50.31	10.22	42 to 75	0.74	–0.75	.75	**.63**

Note: N = 124. ADH = Attention Deficit/Hyperactive; SAP = Solitary Aggressive (Provocative); SAI = Solitary Aggressive (Impulsive); OPD = Oppositional Defiant; DIF = Diffident; AVO = Avoidant.
[a]Specificity = r_α – Communality. Specificity estimates exceeding error variance are considered significant and are in bold type. Overactivity r_α = .89. Underactivity r_α = .79.

orthogonal solution is clearly appropriate, as these factors appear truly independent (Tabachnick & Fidell, 2007).

The Overactivity and Underactivity factors are similar to the Externalizing and Internalizing factors frequently reported in the youth psychopathology literature (Achenbach, 1991; Achenbach & Rescorla, 2001; Cicchetti & Toth, 1991; Merrell, 1994, 2002, 2003; Quay, 1986; Reynolds & Kamphaus, 1992, 2004). However, behavior-rating scales such as the ASEBA, BASC-2, and PKBS-2 often have moderately high correlations between their composite Externalizing and Internalizing scores (r_{ASEBA} = .45, Achenbach & Rescorla, 2001; $r_{PKBS\text{-}2}$ = .66, Merrell, 2002; $rs_{BASC\text{-}2}$ ranging from .39 to .51, Reynolds & Kamphaus, 2004). Correlations of these magnitudes complicate clinical interpretation of test scores and interpretation of factor analyses. Syndromes like anxiety and depression were intentionally avoided in development of the ASCA due to their "internalized" nature and are difficult or impossible for third parties to adequately observe and report (Merrell, 2003). The Underactivity syndromes of the ASCA (DIF and AVO) focus on specific behaviors indicating shy, timid, distant, and withdrawing behaviors that teachers may directly observe within school contexts and settings. These behaviors may be related to

"internalizing" dimensions; however, they do not directly measure internalizing characteristics of anxiety or depression. This difference may account for why the ASCA Overactivity and Underactivity syndromes are consistently observed to be independent, as many of the ASCA items (observable behaviors) are mutually exclusive.

The intercorrelations among the ASCA core syndromes in the present study, as well as in other samples (Canivez, 2004, 2006a, 2006b; Canivez & Beran, in press; Canivez & Bohan, 2006; McDermott, 1993, 1994), are also lower than those reported in other teacher report measures of child psychopathology (ASEBA, BASC-2, and PKBS-2). This reflects greater independence and interpretability of the individual core syndromes, an advantage for the ASCA in that psychologists may interpret the separate ASCA core syndromes. This is not the case for instruments where several scales have substantial covariance, such as the ASEBA (Teacher Rating Scale (TRS) Attention Problems-Aggression $r = .74$; Achenbach & Rescorla, 2001), BASC-2 (TRS Hyperactivity-Aggression rs = .78-.83; Reynolds & Kamphaus, 2004), and PKBS-2 (Self-Centered/Explosive-Attention Problems/Overactive $r = .80$, Self-Centered/Explosive-Antisocial/Aggressive $r = .80$, Antisocial/Aggressive-Attention Problems/Overactive $r = .78$; Merrell, 2002). Such high correlations may significantly limit, or prevent entirely, individual scale interpretation. There are also implications for determining syndrome co-morbidity when correlations between syndromes or scales are too high.

Limitations

Limitations of this study are primarily based on representativeness and sample size. Participants in the present study included only 124 Hispanic/Latino youths in one Arizona school district, which limits generalization of the present results. Disability status, geographic location, school district size, and other factors may not adequately reflect the overall population, so caution must be exercised in interpreting these results beyond this group. When data on additional Hispanic/Latino groups from different geographic areas are obtained, comparisons between the samples will then be possible and help to determine broader generalizability within the Hispanic/Latino population. Furthermore, although factorial invariance of scales is necessary, it is not a sufficient condition for complete generalizability of scales across ethnicity (Van de Vijver & Poorttinga, 2005). However, the latent structural invariance of the ASCA satisfies the first condition. Future studies of ASCA generalizability across demographic groups using item response theory–based methods such as differential item functioning will be helpful in investigating potential differences at the item level (Zumbo, 1999).

Although not a limitation of the present study, the ASCA norms are older than the ASEBA, BASC-2, and PKBS-2, which have been more recently revised and restandardized. Although the ASCA norms may be more dated, they may not be as vulnerable as norms of cognitive ability tests, which must be updated more frequently due to the Flynn Effect (Flynn, 1984, 2007).

Conclusion

The present study examined several empirical issues Padilla (2004) raised regarding psychological assessment of ethnic minorities and strongly supported the two-factor structure of the ASCA core syndromes and the factorial independence of the Overactivity and Underactivity syndromes with a small sample of Hispanic/Latino students. Furthermore, no differences were observed in mean syndrome or scale ratings between the present Hispanic/Latino sample and Hispanics within the ASCA standardization sample, suggesting reasonable equivalence. School psychologists now have additional evidence that the ASCA appears to measure the same dimensions of youth psychopathology with Hispanic/Latino students as the general population and Native

American Indians and thus can be more confident in using the ASCA with Hispanic/Latino youths. With replication of these results with larger Hispanic/Latino samples, school and clinical psychologists may use the ASCA with Hispanic/Latino youths with even greater confidence.

Declaration of Conflicting Interest

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Notes

1. Degrees of freedom for ASCA supplementary syndromes differ from core syndromes because supplementary syndromes are not scored for certain individuals. The DEL syndrome is not scored for females under the age of 12 and the LEH syndrome is not scored for males or females older than 11.
2. MANOVA, ANOVA, and raw score descriptive statistics tables are available upon request from the first author.

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