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Factor Structure of the BASC–2 Behavioral and Emotional Screening System Student Form

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The BASC–2 Behavioral and Emotional Screening System (BESS) Student Form (Kamphaus & Reynolds, 2007) is a recently developed youth self-report rating scale designed to identify students at risk for behavioral and emotional problems. The BESS Student Form was derived from the Behavior Assessment System for Children—Second Edition Self-Report of Personality (BASC–2 SRP; Reynolds & Kamphaus, 2004) using principal component analytic procedures and theoretical considerations. Using 3 samples, the authors conducted exploratory factor analyses (EFA) and confirmatory factor analyses (CFA) to understand the underlying factor structure of the BESS Student Form. The results of the EFA suggested that the SRP contained a 4-factor (i.e., Personal Adjustment, Inattention/Hyperactivity, Internalizing, School Problems) emergent structure, which was supported by CFA in 2 additional samples. Practical and research implications are discussed.

Keywords: screening, behavior rating scale, factor analysis, BASC–2 Behavioral and Emotional Screening System, school

The BASC–2 Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007) is a newly developed tool designed to screen students for the risk of current or future emotional and behavioral problems. The BESS consists of a series of behavioral rating scales available in teacher- and parent-report formats for students in preschool through 12th grade and in self-report format for students in third through 12th grades. The BESS self-report form (BESS Student Form) is designed to measure students' own perceptions of their emotional and behavioral functioning. Items measure both problem behaviors (externalizing problems, internalizing problems, school problems, inattention/hyperactivity) and adaptive competencies (adaptive skills/personal adjustment). The sum score of the item ratings is converted to a single *T* score that represents a student's risk for the presence of emotional and behavioral problems.

The BESS Student Form consists of items that were originally part of the item pool utilized during the development and national standardization of the Behavior Assessment System for Children—Second Edition Self-Report of Personality (BASC–2 SRP; Reynolds & Kamphaus, 2004). The BASC–2 SRP is a comprehensive behavior rating scale that consists of 16 subscales (i.e., Anxiety, Attention Problems, Attitude to School, Attitude to Teachers, Atypicality, Depression, Hyperactivity, Interpersonal Relations, Locus of Control, Relations With Parents, Self-Esteem, Self-Reliance, Sensation Seeking, Sense of Inadequacy, Social Stress, and Somatization) that are subsumed under four composite scales (i.e., Internalizing Problems, School Problems, Personal Adjustment, and Inattention/Hyperactivity). The structure of the SRP was formed on the basis of factor analytic results.

To create the BESS Student Form, the authors originally performed an unrotated principal components analysis (PCA) separately for each composite scale, selecting items for the screener that best represented the dimension (item loading values $\geq$ .65). Besides loading values, items' distinct content contributions were considered to ensure that selected items represented unique behaviors and that the set of items for each dimension represented multiple subscales. Finally, the internal consistency of each subset of items was considered, with a minimum criterion of .80 or higher set for each dimension. It was of interest to choose roughly equal numbers of items from each dimension to ensure equal content representation on the screener; however, more items were selected from some dimensions to meet the minimum reliability requirement. The final BESS Student Form consists of 30 items, which represent the following dimensions: Inattention/Hyperactivity (five items), School Problems (six items), Personal Adjustment (nine items), and Internalizing Problems (10 items).

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Initial validity evidence for the BESS Student Form is presented in the form of correlations with other behavioral and emotional measures, including the BASC-2 SRP, Achenbach System of Empirically Based Assessment Youth Self Report (Achenbach & Rescorla, 2001), Conner's Rating Scales (Conners, 1997), Children's Depression Inventory (Kovacs, 2001), and the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 2000). Correlations between the BESS Student Form and the BASC–2 SRP composite scales are strong (.69–.86), as would be expected since the former is primarily a subset of items from the latter and corrections for overlapping items were not made. In addition, the BESS Student Form has moderate correlations with other measures of behavioral and emotional problems, ranging from .51 to .77, providing some evidence of concurrent validity. However, construct validity information for the BESS Student Form is lacking.

The BESS Student Form was created to represent items from four overarching dimensions of emotional and behavioral problems. Although the BESS Student Form is designed to solely offer a *T* score representing the overall risk level of emotional and behavioral problems, it is important that this overall score captures the underlying constructs of common emotional and behavioral problems so that it can identify students presenting with a variety of different problems. In commonly utilized multiple-gating screening assessment systems, only students who are flagged to be "at risk" through this first screening gate are provided more intensive assessment; therefore, if certain constructs are not represented, then students with those underlying problems will be missed (Kamphaus, Dowdy, Kim, & Chin, in press). However, there is no independent evidence to suggest that the screener measures the constructs it was designed to measure.

To our knowledge, no prior investigations of the factor structure of the BESS Student Form have been conducted using either exploratory or confirmatory methods or for independently collected samples of children. Despite the increasing focus on early identification and screening procedures to identify students at risk for emotional and behavioral problems (Albers, 2007), there is inconsistent and insufficient evidence on the factor structure of commonly used screeners, including the BESS Student Form. This lack of knowledge makes it difficult to ascertain if the tools are appropriate for use or what constructs are being measured by such brief forms.

For example, the factor structure of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997, 1999, 2001), one of the most widely used screeners of emotional and behavioral problems, varies from a three- to five-factor model depending on the sample being studied (Mellor & Stokes, 2007). Such inconsistencies demonstrate the need for additional research into the psychometric properties of screening instruments. Further inquiries into the underlying constructs of newly developed screening tools can provide evidence of the emergent factors associated with the development of childhood behavioral and emotional problems. Additional psychometric support can help practitioners make informed decisions regarding the selection and use of various assessment instruments.

This study utilized two data sets (the BASC–2 SRP norming sample and an additional independent sample collected as part of a study investigating the longitudinal validity of the BESS) to examine the factor structure of the BESS Student Form. The present study examined the emergent factor structure of the BESS Student Form using exploratory and confirmatory factor analytic methodologies with the BASC–2 SRP norming sample. As items of the BESS Student are a subset of the BASC–2 SRP, this norming data set was primarily used to identify and verify the underlying structure of the instrument. We hypothesized that the instrument would contain a four-factor structure similar to the full BASC–2 SRP, each recognizable as one of the four composite scales from the BASC–2 SRP (Internalizing Problems, School Problems, Personal Adjustment, and Inattention/Hyperactivity). We also hypothesized that items taken from each scale (e.g., item regarding hating school from the Attitude to School subscale, which loads onto the School Problems composite) would load on similar dimensions as with the BASC–2 SRP.

Due to the need for an independent sample for validation, CFAs were used to examine the fit of the model with a separate sample of children and adolescents. Adequate fit of the proposed model would allow for a cross-validation of the factor structure across the representative samples utilized for the study. Investigations such as these can add to or detract from the psychometric support for the internal structure of the BESS Student Form and identify further implications for its use.

Method

Sample

Three samples were utilized to conduct one exploratory factor analysis (EFA) and two confirmatory factor analysis (CFA) studies. Samples 1 and 2 were randomly chosen from the larger BASC–2 SRP norming data set and were composed of students ages 6–11; both samples were represented by 52% male participants. The first sample ($N = 994$) used for the EFA included race/ethnicity categories reported by parents as follows: 13% Black ($n = 129$), 21.1% Hispanic ($n = 210$), 60.3% White ($n = 600$), 2.2% Asian ($n = 22$), 1.9% American Indian ($n = 19$), and 1.4% other ($n = 14$). For Sample 2 ($N = 1{,}466$), race/ethnicity was reported as follows: 12% Black ($n = 176$), 21.7% Hispanic ($n = 318$), 60.9% White ($n = 893$), 2.5% Asian ($n = 37$), 1.8% American Indian ($n = 26$), and 1% other ($n = 16$). Gender representation was approximately equal across all ethnicities and ages for both Sample 1 and 2.

The third sample was an independent sample used to verify CFA results. This sample was collected from the greater Los Angeles, California, area ($N = 273$), as part of a larger research project investigating the longitudinal validity for screening (Advancing Children's and Teacher's Success through Early Screening and Intervention; U.S. Department of Education). The sample (ages 7–12) had approximately 52% male participants. Ethnicity was reported by parents as follows: 1.5% Asian ($n = 4$), 2.6% Black ($n = 7$), 1.9% Filipino ($n = 5$), 81.4% Hispanic ($n = 219$), 1.5% Pacific Islander ($n = 4$), and 4.5% White ($n = 12$). This independent sample was significantly different from the norming sample due to the large proportion of Hispanic students. Therefore, this analysis allows for an investigation into the generalizability of the factor structure across samples that differ by racial/ethnic composition.

Procedure

The first two samples were derived from the national norming sample for the BASC–2 SRP using random selection. Forty percent of the sample was utilized for the EFA and 60% for the initial CFA study. The BESS Student Form was derived from the BASC–2 norming sample. The SRP–Child version was normed on a large sample that is representative of the general population of U.S. children with regard to sex, race/ethnicity, and clinical or special education classification (Reynolds & Kamphaus, 2004). Using the norming sample, we randomly selected cases using an approximate 40%–60% split of the sample. A 40%–60% split was chosen to allow for increased power for the CFA, thereby allowing the suggested factor structure from the EFA to be confirmed on a larger sample.

For the Los Angeles sample, students in Grades 3 and above were randomly selected from 20 elementary schools, with a maximum of 4 students per classroom (2 boys, 2 girls). Informed written parental consent and student assent were obtained, and participating students received approximately $10-worth of books for their participation. Although the final sample consisted of 273 students, a significantly larger number of students were solicited for data collection, and a number of parents declined consent. Local site coordinators varied in the degree to which they recorded this information; however, on the basis of a query of site coordinators, it was estimated that approximately 30% of parents declined participation, and less than 1% of students declined assent.

Measure

The BESS Student Form (Kamphaus & Reynolds, 2007; BESS Student) is a 30-item behavior rating scale screener measuring youth self-reported levels of risk for behavioral and emotional problems. The BESS Student Form requires no informant training, can be completed in 5 min or less, and is available in both Spanish and English. Only the English version was utilized in this study.

Students in Grades 3 through 12 report on their behavioral and emotional functioning using a 4-point scale (i.e., *never, sometimes, often, almost always*). The sum of the item raw scores is transformed to a total *T* score, in which higher scores reflect more problems: 20–60 (1 standard deviation above or below the mean) suggests a normal level of risk, 61–70 (scores between one and two standard deviations above the mean) suggests an elevated level of risk, and scores of 71 or higher (more than two standard deviations above the mean) suggest an extremely elevated level of risk. These classification labels of risk were determined according to the distance of the scores from the norming sample mean and are primarily intended to assist practitioners with making decisions regarding which students may need additional assessment or services. The psychometric properties of the BESS Student Form are generally acceptable, having good split-half reliability (.90–.93) and test–retest reliability (.80). According to the BESS manual (Kamphaus & Reynolds, 2007), coefficient alpha, the most common internal consistency estimate used with Likert responses, was not selected over the reported Spearman–Brown prophecy formula for the reported split-half reliability "because of the diversity of item content" across different form types (p. 34). The split-half reliability reflects the consistency of scores for half the measure when compared with items of similar content on the other half. Therefore, an estimate of Cronbach's alpha is not reported.

The test manual reports classification accuracy when using the BESS Student Form to predict students' at risk status. The form yielded moderate sensitivity (.59), high specificity (.95), moderate positive predictive value (PPV; .68), and high negative predictive value (NPV; .92). In addition, the BESS Student Form has moderate correlations with other measures of behavioral and emotional problems: the Achenbach System of Empirically Based Assessment Youth Self-Report (Achenbach & Rescorla, 2001; .66–.77), Conner's Rating Scales (Conners, 1997; .51–.68), Children's Depression Inventory (Kovacs, 2001; .51), and the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 2000; .55).

Statistical Analyses

EFA: Statistical methodology. Although we formed a priori hypotheses regarding the number of factors on the basis of the methods used to develop the BESS Student Form, an EFA was performed to investigate the emergent factor structure at the item level. This also allowed for an unconstrained investigation of the best structure to explain the correlation among the variables. In order to fit the model by freely estimating the parameters using the common factor model, we performed the EFA using the maximum likelihood estimation with robust standard errors (ML) method. ML is considered to be a robust estimation method because it provides weighted mean and variance adjustment for factor loadings and correlations, goodness-of-fit indices, is robust to nonnormality among variables, and may be used with ordinal data (Finney & DiStefano, 2006).

In order to allow for the probability that the emergent factors are correlated, we applied oblique promax rotation using Mplus software version 5.2 (Muthén & Muthén, 2007). Whereas Mplus is traditionally used for structural equation modeling investigations, the software package can also run EFA. Advantages of running EFA with Mplus is the addition of model fit indices and standard errors of the parameter estimates, both of which can help researchers judge the suitability of a final solution. To determine the optimal number of factors, we used the following criteria: Kaiser's eigenvalues, Cattell's scree plot, parallel analysis, chi-square test of model fit, root-mean-square error of approximation (RMSEA) fit index, standardized root-mean-square residual (SRMR) fit index, and factor loadings.

Fabrigar, Wegener, MacCallum, and Strahan (1999) suggested that chi-square is highly influenced by large sample size; therefore, it was expected to be significant, indicating that it is acceptable to retain $p < .05$. Fabrigar et al. also reported that RMSEA values less than .05 illustrate close model–data fit, values greater than .05–.08 constitute an acceptable fit, and values greater than .10 are a poor fit of the model data. SRMR values less than .08 are considered a good fit, and values close to zero are considered a perfect fit (Brown, 2006). Additionally, factor determinants close to 1.0 are considered to indicate how well a factor was measured by the variables (Grice, 2001).

Kaiser's eigenvalues and scree plot are considered "*among the least accurate methods* for selecting the number of factors to retain" (Velicer & Jackson, 1990, as cited in Costello & Osborne, 2005, p. 2). Therefore, additional criteria were utilized to account for these limitations. A lesser known procedure of parallel analysis (PA), a statistically sound and accurate method, assisted in determining the number of extracted factors (O'Connor, 2000). In PA, the actual data's eigenvalues are compared with a correlation matrix of randomly generated, uncorrelated variables with the same dimensions (Horn, 1965). The factors with eigenvalues greater than the eigenvalues from the random generation are retained. PA was performed using SPSS (version 17.0) developed by O'Connor (2000).

CFA: Statistical methodology. Both CFA investigations (i.e., Sample 1 and Sample 2) were performed separately using ML estimation methods. CFAs were conducted on the factor structure indicated by the results of the EFA. Variables specified for each factor were allowed to freely correlate, except for the reference variable for each factor, which was set to 1.0. To set the scale for the CFA, we set the item with the highest loading variable to 1.0 to serve as a reference variable for the other freely estimated parameters.

Results

EFA

Initially, each data set was screened to ensure that variables were approximately normally distributed, and descriptive statistics (i.e., means, standard deviations, skewness, and kurtosis) for each variable included in the samples were examined. Based on cutoff values of |2.0| for skewness and |7.0| kurtosis (Chou & Bentler, 1995; Curran, West, & Finch, 1996), only one item (Item 22: feeling stupid) showed violations of nonnormality. Since data normality is not a necessary assumption for EFA, and as the ML estimation method is robust to nonnormality (Satorra & Bentler, 1994), we elected to retain this item. Positively worded items were reverse scored for analyses. Additional data screening was performed using SPSS (version 17.0) listwise deletion. No variables were missing on any individual case; therefore, no cases were deleted.

An EFA was performed to observe the correlation matrix of the BESS Student Form. Model solutions with factors from one to six were initially investigated. Traditional methods for factor selection, including Kaiser's method of interpreting eigenvalues greater than 1.0 as the possible number of factor solutions and Cattell's scree plot examining for the last "substantial" drop in reduced eigenvalues, both suggested a five-factor solution (see Figure 1 for graphic representation of the data). However, as the largest drop was observed after the first factor, a one-factor model solution was further examined. Additionally, a one-factor solution was supported theoretically as each item was selected for inclusion in this screening measure to represent a single overall risk score. Pattern coefficients yielded adequate factor loadings, with absolute values ranging from .36 to .62. This indicated that each item was at least moderately representative of the overall emergent construct of behavioral and emotional risk.

Additional factor solutions were further investigated to determine whether the constructs related to overall risk could be further identified. Since the examination of eigenvalues and scree plots both suggested a five-factor solution, this solution was examined next. However, upon closer examination, the fifth factor included only two variables with factor loadings greater than .01. This indicated an unparsimonious solution not plausibly theoretically supported as a major factor and appeared to be overfactoring the model (Fabrigar et al., 1999). Parallel analysis comparing the observed data's eigenvalues with a random set of eigenvalues indicated to retain four factors (eigenvalue Factor 5 observed data = 1.056, and random data = 1.16, while Factor 4 indicated 1.24 and 1.18, respectively).

Next, the rotated structure coefficients were reviewed. Three separate items appeared to be problematic—Item 9 (being liked by others), Item 11 (difficulty sitting still), and Item 22 (feeling stupid)—as they all contained inadmissible factor loadings greater than 1.0, and/or factor cross-loading both positively and negatively. Additionally, Item 22 was identified during preliminary data screening as nonnormally distributed. Each of the problem items was sequentially deleted, and the model was reanalyzed and evaluated after each deletion. The final model contained 27 items after the three problematic items were removed. The one-, two-,

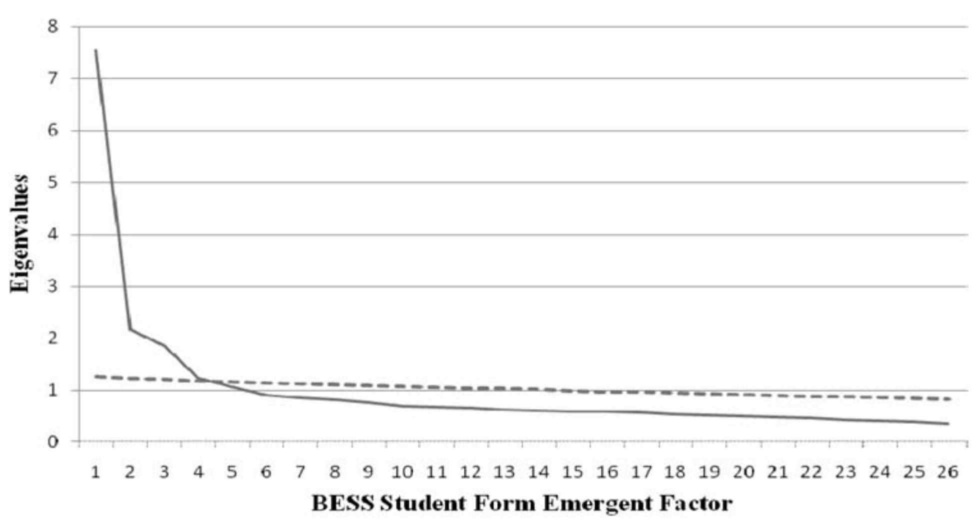


Figure 1. Exploratory factor analysis scree plot of eigenvalues and parallel analysis. The dashed line indicates simulated eigenvalues; the solid line represents observed data eigenvalues.

and three-factor model solutions were each rejected due to having poorer fit statistics than those of the four-factor model (see Table 1 for fit indices). Goodness-of-fit statistics supported the four-factor model with the set of 27 items, $\chi^2(249) = 528.705$, $p = .00$, RMSEA = .038 (90% confidence interval [CI] = .33–.042), and SRMR = .028. On the basis of Fabrigar et al.'s (1999) fit statistic guidelines, the model was classified as in the range of *good* to *acceptable* fit. See Table 1 for the fit indices of factor solutions with and without the three problematic items (i.e., Items 9, 11, and 22). When we used the guideline recommended by Costello and Osborne (2005) to retain items with loadings of .32 or greater, the following four factors with a minimum of 4 or more variables emerged: Personal Adjustment, School Adjustment, Internalizing Problems, and Inattention/Hyperactivity. The rotated structure coefficients by variable are represented in Table 2.

Factor determinants and unique factor internal consistency estimates were examined. Factor determinants are validity coefficients measuring the correlation between the factor and the variables, in which loadings closest to one are considered most desirable (Grice, 2001). The factor determinants were sufficient for the four-factor solution: Personal Adjustment (Factor 1) = .914, Inattention/Hyperactivity (Factor 2) = .887, Internalizing Problems (Factor 3) = .925, and School Problems (Factor 4) = .910. Correlations among the four factors ranged from –.40 to .64. Factors correlated in expected directions, both positively and negatively, on the basis of their conceptual relationship (e.g., Inattention/Hyperactivity was positively correlated with School Problems but negatively correlated with Internalizing Problems). Internal consistency estimates based on Cronbach's alpha for each distinct factor fell within the adequate range (i.e., $>.70$; Schmitt, 1996): Personal Adjustment (Factor 1) $\alpha = .77$, Inattention/Hyperactivity (Factor 2) $\alpha = .71$, Internalizing Problems (Factor 3) $\alpha = .84$, and School Problems (Factor 4) $\alpha = .81$. Factor determinant values and Cronbach's alpha reliability coefficients indicated that each factor could be considered distinct as values fell within the acceptable ranges, respectively. Table 3 presents correlations among the four extracted factors.

CFA

CFA based on the four-factor solution (i.e., Personal Adjustment, Inattention/Hyperactivity, Internalizing Problems, and School Problems) derived during the EFA was conducted separately on the two independent samples. Figure 2 illustrates the path diagram tested with CFA. The solution for the four-factor model was first tested on Sample 1 (BASC–2 SRP norming sample). Fit indices for Sample 1 were recorded as follows: $\chi^2(318) = 936.55$, $p = .00$, RMSEA = .042 (90% CI = .039–.045), SRMR = .040, and comparative fit index (CFI) = .925. In order to improve model fit and screen for outliers, modification indices were reviewed for expected parameter change (EPC) values. All observed outliers (i.e., EPC values greater than 20) were explored for improved model fit and theoretical justification for the correlation of item residuals. On the basis of these criteria, two item pairs (that is, Items 29 and 12, with 33.677; and Items 30 and 21, with 21.126) were identified as measuring similar constructs and loading onto the same factor. Therefore, residual variances of two pairs of items were allowed to correlate: Item 29 (school comfort) with Item 12 (school interest) and Item 30 (others respect me) with Item 21 (others think I'm fun to be with). This respecified model was reanalyzed with the same sample.

A chi-square difference test was conducted to determine whether allowing selected correlated residuals resulted in a significant improvement in fit. Results showed a significant difference between the model allowing error terms to correlate and the original model without correlated errors, $\Delta\chi^2 = 45.56$, $df = 2$, $p = .001$, illustrating an improvement in model specification. Examination of the global fit indices and residuals indicated that the Sample 1 group, similar in demographics to the EFA sample, demonstrated a good fit, $\chi^2(316) = 644.53$, $p = .00$, RMSEA = .031 (90% CI = .027–.034), SRMR = .038, CFI = .945. All standardized factor loadings were greater than .44, which is significant and of moderate magnitude (Costello & Osborne, 2005). Figure 3 reports the standardized parameter estimates and corresponding significance.

A second CFA on Sample 2 (Los Angeles) was performed using the modified model. Sample 2 also demonstrated an acceptable fit, $\chi^2(316) = 495.60$, $p = .00$, RMSEA = .046 (90% CI = .038–.053), SRMR = .065, and CFI = .90. All standardized factor loadings were greater than .37. Figure 4 illustrates the standardized parameter estimates and statistical significance for the Los Angeles sample.

Table 1
Fit Indices for Exploratory Factor Analysis of the BASC–2 BESS Student Form

Model	χ^2	*df*	RMSEA	RMSEA 90% CI	RMSR
One factor[a]	5103.389*	405	.121*	[.118, .124]	.087
One factor[b]	2167.087*	324	.085*	[.082, .088]	.080
Two factor[a]	4234.792*	376	.114*	[.111, .117]	.067
Two factor[b]	1417.088*	298	.069*	[.065, .073]	.058
Three factor[a]	2182.903*	348	.082*	[.079, .085]	.066
Three factor[b]	721.783*	273	.046*	[.042, .050]	.036
Four factor[a]	1507.817*	321	.068*	[.065, .072]	.051
Four factor[b]	528.705*	249	.038*	[.033, .042]	.028
Five factor[a]	758.953*	295	.045*	[.041, .049]	.034
Five factor[b]	397.049*	226	.031*	[.026, .036]	.023

Note. χ^2 = chi-square test of model fit; RMSEA = root-mean-square error of approximation; CI = confidence interval; RMSR = root-mean-square residual.
[a] Includes all 30 items. [b] Items 9, 11, and 22 were not included to improve model fit.
* $p < .001$.

Table 2
EFA Promax Pattern and Structure Coefficients for the BESS Student Form Four-Factor Solution

		F1: Personal Adjustment		F2: Inattention/Hyperactivity		F3: Internalizing problems		F4: School problems	
Item #	Item description	Pattern coefficient	Structure coefficient	Pattern coefficient	Structure coefficient	Pattern coefficient	Structure coefficient	Pattern coefficient	Structure coefficient
1	Good at decision making	**.430**	.481	−.107	−.298	.047	.315	.044	−.197
4	Like looks	**.369**	.426	.011	−.221	.094	.287	−.036	−.216
15	Parental trust	**.636**	.664	−.120	−.359	−.036	.357	.010	−.285
18	Parents listen	**.669**	.660	.109	−.219	.094	.350	.028	−.226
21	Others think I'm fun to be with	**.651**	.638	−.058	−.289	.043	.348	.148	−.156
26	Parents are proud	**.676**	.660	.047	−.242	.021	.325	.016	−.240
29	School comfort	**.449**	.539	.089	−.244	−.089	.255	**−.432**	−.533
30	Others respect me	**.640**	.605	−.012	−.230	−.083	.250	−.007	−.234
2	Talk when others talk	.047	−.184	**.599**	.554	.041	−.321	.001	.246
8	Paying attention to teacher	.054	−.260	**.621**	.664	−.050	−.451	.070	.360
24	Noisy	−.026	−.268	**.563**	.580	.001	−.380	.016	.290
25	Trouble for inattention	−.154	−.360	**.488**	.556	−.028	−.406	−.032	.269
28	Difficulty standing still	.002	−.265	**.430**	.536	−.108	−.415	.079	.324
3	Worries	.025	−.290	−.083	.355	**−.742**	−.652	.061	.192
5	Feeling out of place	.026	−.312	.209	.518	**−.510**	−.624	−.018	.277
7	Others angry at	−.022	−.336	.156	.484	**−.531**	−.623	−.049	.248
10	Life getting worse	−.086	−.408	−.029	.427	**−.555**	−.635	.134	.380
13	People out to get me	.007	−.279	−.045	.337	**−.543**	−.541	.077	.273
14	Worry about future	.011	−.287	−.065	.349	**−.715**	−.632	−.087	.168
16	Feeling left out	−.055	−.335	.285	.514	**−.358**	−.548	−.050	.250
20	Wanting to improve, but unsuccessful	−.041	−.322	.072	.408	**−.481**	−.556	.020	.265
23	Blamed for problems out of my control	−.009	−.326	.213	.505	**−.419**	−.577	.039	.313
27	Failure despite effort	−.038	−.337	.081	.434	**−.504**	−.587	.028	.286
6	Interest in quitting school	.058	−.292	.166	.478	−.150	−.436	**.513**	.628
12	School interest	.137	−.217	.070	.393	.018	−.297	**.836**	.807
17	Hate school	−.067	−.322	.026	.349	.069	−.275	**.724**	.735
19	Unfair teachers	−.098	−.331	−.003	.319	−.111	−.340	**.446**	.529

Note. Pattern coefficient factor loadings > \|.32\| are in bold type. F = factor.

Discussion

An EFA and two separate CFAs revealed a four-factor solution (i.e., Personal Adjustment, School Problems, Internalizing Problems, and Inattention/Hyperactivity) of emergent constructs for the BESS Student Form. These four factors are identical to the full rating scale that BESS Student Form items were derived from (i.e., BASC–2 SRP composite subscales: Personal Adjustment, Internalizing Problems, School Problems, and Inattention/Hyperactivity). The results indicate that the BESS Student Form appears to be measuring comparable constructs as its full-scale predecessor and is measuring the constructs that it was designed to represent. The limitation of using the norming sample for the BASC–2 SRP to conduct the EFA and initial CFA deserves mention. Although this allowed for an initial investigation of the structure of the BESS Student Form, further validation work remains to examine the utility of the BESS Student Form as an independent tool.

Table 3
Extracted Factor Correlations for BESS Student Form

Factors	1	2	3	4
1. Personal Adjustment	1.000	—		
2. Inattention/Hyperactivity	−0.420	1.000	—	
3. Internalizing Problems	0.504	−0.643	1.000	—
4. School Problems	−0.399	0.469	−0.406	1.000

Note. Results from exploratory factor analysis with promax-rotated factor loadings.

The underlying factors of Personal Adjustment, School Problems, Internalizing Problems, and Inattention/Hyperactivity as related to childhood maladjustment are captured in the BESS Student Form. This suggests that in a brief (less than 5 min) self-rating scale format, practitioners may be able to identify students who manifest a broad range of internalizing, externalizing, and school problems to aid in further assessment and intervention triage; however, further research is needed. Perhaps most important, assessing the diagnostic efficiency of the BESS Student Form when compared with diagnostic groups and diagnostically related measures of psychopathology is needed. Obtaining additional information on the performance of the BESS Student Form against nontest, behavioral correlates is recommended, as well as validating the factor structure of the BESS Student Form against external criteria, such as referrals to special education classes, number of discipline infractions, and number of school suspensions.

Future research is needed to determine if the BESS Student Form items accurately discriminate between students with and

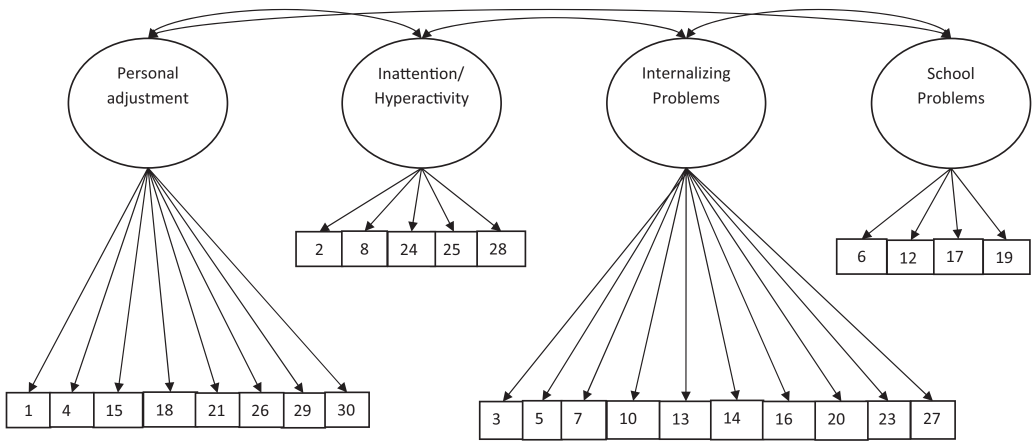


Figure 2. Path diagram of the final exploratory factor analysis model.

without emotional and behavioral problems. This study offers promise that this newly developed screening measure could help mitigate the inequities of current referral systems that are grossly underidentifying children with behavioral and emotional problems (Kataoka, Zhang, & Wells, 2002), especially those with internalizing symptoms (Bradshaw, Buckley, & Ialongo, 2008). The Internalizing Problems factor is measured by more variables than is any other factor. As older children may be the best reporters of their internalizing behavior problems (Smith, 2007), it is important that self-report rating scales are, in fact, capturing this construct. Results of this investigation provide evidence that the BESS Student Form measures an internalizing problems construct.

We were able to replicate the four-factor factor structure uncovered during the EFA across two ethnically and regionally diverse samples using CFA methods, which provides preliminary validity evidence for the cross-cultural use of the BESS Student Form. To supply further cross-cultural validity evidence and investigate measurement invariance, multiple group factor analyses and different item functioning should be examined across additional diverse samples.

Future research should also investigate the latent factor structure across other forms (parent, teacher) recently developed as a part of the BESS. A multitrait, multimethod study may be of interest to show convergent and discriminant validity across the different BESS forms. Also, future research may investigate the contribu-

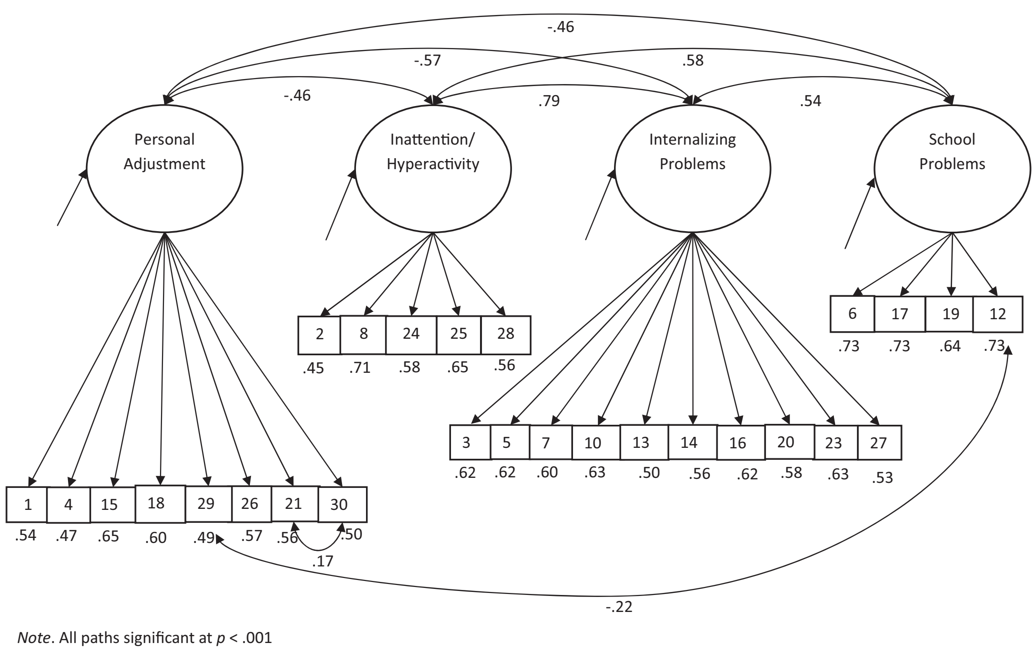
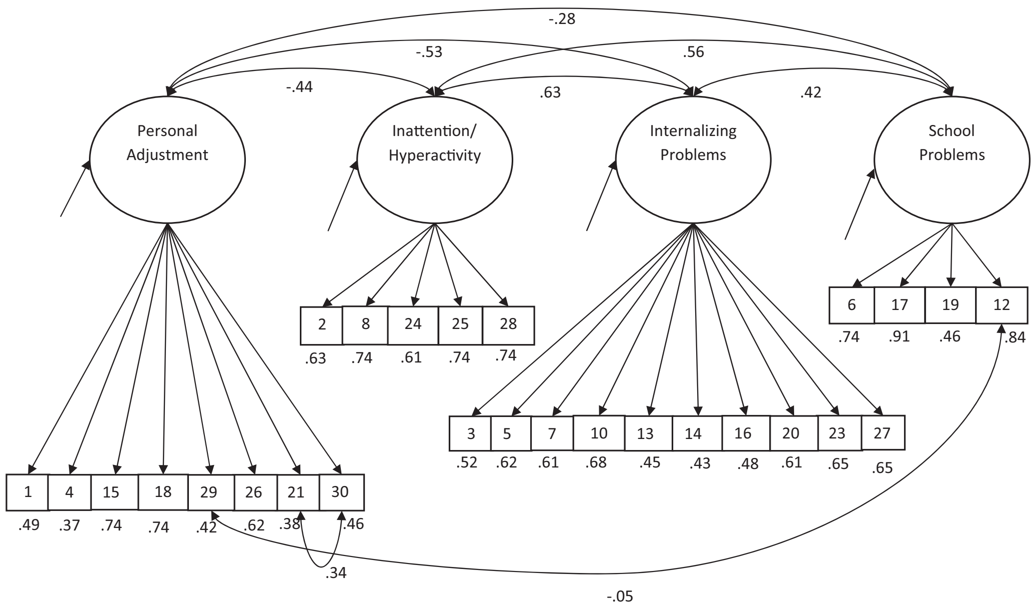


Figure 3. Standardized parameter estimates of confirmatory factor analysis for Sample 1 (national Behavior Assessment System for Children—Second Edition Self-Report of Personality norming sample) with promax-rotated factor structure.



Note. All paths significant at $p < .001$

Figure 4. Standardized parameter estimates of confirmatory factor analysis for Sample 2 (Los Angeles) with promax-rotated factor structure.

tions of individual items by modeling the higher order structure identified in the data set. This could be conducted by using the Schmid and Leiman (1957) procedure to partition item variance to the higher order and lower order factors to better understand what is being measured at the first- and second-order levels.

Additional factor analytic investigations can help identify overlapping information and the constructs measured differently across raters and forms. Such studies can also contribute explanations as to why certain items do not demonstrate expected fit (i.e., Item 22: feeling stupid), by comparing where similar items lay in factor structures on other raters' forms. Continuing research is also needed to investigate the predictive validity of screening instruments such as the BESS Student Form (Glover & Albers, 2007). Knowledge of the connection between emergent factors and behavioral and emotional problems can improve the development of instrumentation, assessment, and risk models for identifying children with these types of difficulties.

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Correction to Dowdy et al. (2011)

In the article "Factor Structure of the BASC–2 Behavioral and Emotional Screening System Student Form" by Erin Dowdy, Jennifer M. Twyford, Jenna K. Chin, Christine A. DiStefano, Randy W. Kamphaus, and Kristen L. Mays (*Psychological Assessment*, Advance online publication. March 7, 2011. doi:10.1037/a0021843), there was an omission in the author note. The author note should have included a disclosure as follows, "Randy W. Kamphaus wishes to disclose a potential conflict of interest in that he receives a portion of royalties on net sales of BESS."

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