Assessing Psychosocial Impairment in Children and Adolescents: A Review of the Barkley Functional Impairment Scale (BFIS)

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Abstract

Appraising psychosocial impairment is an essential enterprise of diagnostic decision-making in the field of school psychology. Despite its importance, few practitioners utilize systematic procedures when engaging in this process, despite the fact that a number of impairment measures and scales have been developed specifically for this purpose. The function of this article to evaluate the technical properties of the Barkley Functional Impairment Scale for Children and Adolescents (BFIS; Barkley, 2012) as well as its potential utility to be utilized by clinicians within school-based settings. Prior to this review, a brief examination of the impairment literature will be conducted in order to provide a richer context for the current evaluation.

Keywords: assessment, impairment, test review, BFIS

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Impairment in psychological, physical, or social-emotional functioning is the *sine qua non* of eligibility for special education and related services under the Individuals with Disabilities Education Act (IDEA) as well as meeting diagnostic criteria for most of the mental health disorders included in the Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-V; American Psychiatric Association, 2013). In fact, federal regulations require all assessment teams to document the degree to which a student is educationally impaired prior to providing them with special education and related services to address identified areas of unique need (McBride, Dumont, & Willis, 2011). As members of school-based assessment teams, school psychologists are ideally positioned to evaluate the relationship between a student's educationally-related symptom markers and their identified psychoeducational weaknesses. Although school psychologist's rarely engage in systematic procedures for evaluating impairment when conducting evaluations to determine eligibility for IDEA-related services or accommodations through section 504 of the American's with Disabilities Amendment Act of 2008 (Merrell, Ervin, & Peacock, 2011).

Until recently, clinicians focused almost exclusively on symptomology when diagnosing and treating physical or mental health problems. However, as survey trends (e.g., continue to demonstrate increased incidence rates of mental health and physical symptoms amongst children and adolescents (Merikangus et al., 2010), relevant diagnostic systems (e.g., DSM) have been revised to incorporate demonstration of functional impairment as a key component of the diagnostic process. According to Wakefield (2009), the inclusion of the impairment criterion within the DSM framework is an important element in battling the diagnostic fallacy of assuming

disorder and dysfunction are equivalent constructs. As an example, it is possible for an individual to meet symptom criteria for a mental health disorder and present with less psychosocial impairment than an individual who does not meet the symptom criteria for the same diagnosis.

An attempt to differentiate between nominal impairment and pathological disabilities has been hampered by the lack of consensus as to how define what the term *impairment* actually means. According to Houts (2001), conflicting definitions are a result of the fact that impairment is inherently socially constructed and implies a value judgment on the part of the diagnosing clinician. As a result there is no agreed upon definition of impairment within the technical literature. Whereas Goldstein and Naglieri broadly refer to impairment as "the functional limitations imposed as the result of some psychological disorder" (2009, p. 2), the oft-maligned Wakefield (1997) definition requires that mental health symptomology result in "harm" to the individual.

Despite the symbiotic relationship between conceptual definitions of impairment and disorder, systematic procedures for assessing impairment in children and adolescents are rarely discussed in most clinical textbooks on behavioral assessment (e.g., Sattler & Hoge, 2006). Additionally, surveys of contemporary practice indicate that measures of impairment are rarely administered by clinicians completing mental health and learning disability evaluations (Gordon et al., 2006; Gordon, Lewandowski, Murphy, & Dempsey, 2002), despite the fact that there are dozens of qualitative and quantitative rating scales that have been developed specifically for such purposes. This is problematic due to the fact that symptom severity often only accounts for 25%-50% of the variance in functional impairment resulting from said symptoms (Lewandowski, Lovett, & Gordon, 2009). Thus, there is a less than perfect relationship between the severities of symptoms and the degree to which an individual is impaired across major life activities.

Traditionally impairment has been clinically appraised using subjective or informal criterion-based rating systems. In these formats clinicians make a qualitative judgment as to the degree to which an individual's life functioning is impaired as the result of a psychosocial disorder. A classic example is the Global Assessment of Functioning Scale (GAF) found in previous versions of the DSM. It should be noted that in the DSM-V, GAF ratings were replaced with impairment-based modifiers for individual disorders. As an example, a clinician who diagnoses an individual with a specific learning disability now has to qualify whether or not the learning disability is *mild*, *moderate*, or *severe* in presentation. Though intuitively appealing, the use of qualitative indicators is problematic due to low inter-rater reliability as well as the fact that the less than robust ordinal characteristics (e.g., gradients) between nominal labels often results in substantial overlap of symptom features regardless of the diagnostic modifier that is assigned (Oliver, Cooray, Tyrer, & Cicchetti, 2003).

As an alternative to criterion-based scales, a number of non-standardized impairment rating scales have been developed over the last three decades such as the Children's Global Assessment Scale (CGAS; Shaffer et al., 1983), the Child and Adolescent Functional Impairment Scale (CAFAS; Hodges, 2000), the Columbia Impairment Scale (Bird et al., 1993), the Brief Impairment Scale (BIS; Bird et al., 2005), and the Impairment Rating Scale (Fabiano et al., 2006). In a comprehensive review, Naglieri (2009) noted that many extant measures operationalized impairment as a unitary construct, contained large amounts of construct-irrelevant variance (e.g., symptoms of psychopathology), and had poor psychometric properties. Furthermore, none of the scales listed above provide a mechanism for comprehensively assessing psychosocial impairment according to evaluation standards, recommended by the American Medical Association (American Medical Association, 2007) and Social Security Administration

(Social Security Administration, 2008), that require evaluators to provide evidence of non-transient impairment through an objective evaluation that utilizes multiple sources and methods (e.g., records review, functional observations, quantitative ratings, interviews). It should be noted that despite their shortcoming, the impairment measures listed above are rarely utilized by school psychologists when conducting eligibility or other related educational evaluations (Barkley, 2012).

Nevertheless, it is critically important for school psychologists to demonstrate consequential impact in home and school functioning resulting from identified psychoeducational symptoms (Smith, Barkley, & Shaprio, 2007). Assessment of impairment is especially prescient for school psychologists who routinely conduct evaluations and referrals for school-based mental health services as well as documenting the effectiveness of therapeutic counseling and other related psychological interventions. As previously discussed, IDEA requires that evaluation teams demonstrate that individual functioning is impaired on a normative basis for most eligibility categories, utilizing average student performance as a benchmark (McBride, Dumont, & Willis, 2011). Unfortunately, school psychologists who rely on clinical judgment to appraise impairment run the risk of error when in engaging in diagnostic decision-making (Watkins, 2009). Thus, there is a critical need to develop a robust, multidimensional, norm-referenced scale to assess child and adolescent impairment for clinical applications within the field of school psychology. The Barkley Functional Impairment Scale for Children and Adolescents (BFIS; Barkley, 2012) is a promising new assessment measure that has been designed specifically to address this critical need in the field. The purpose of this brief article is to review the technical and functional characteristics of the BFIS as well as evaluate its potential utility as a diagnostic tool in clinical and educational settings.

Test Description

The Barkley Functional Impairment Scale: Children and Adolescents (BFIS) authored by Russell A. Barkley and published by Guilford Press in 2012, is a norm-referenced rating scale that is administered to the parents of children and adolescents ages 6-17 years. The measure is designed to evaluate the degree of functional impairment that parents believe that their children are experiencing across 15 psychosocial domains, without reference to a specific mental or medical disorder. It can be utilized in clinical and research settings as a screening measure as well as a progress monitoring tool for evaluating the impact of psychological interventions. According to the manual, the BFIS is intended to be administered and interpreted by trained professionals who have sufficient educational background in human psychological functioning and psychosocial impairment. The scale is an extension of the Home Situations Questionnaire (HSQ; Barkley, 1981) and is the result of psychometric research conducted on the HSQ over the last 30 years. Although the BFIS is not based upon a specific theory of functional impairment, the author defines the construct as the "degree of difficulty in functional effectiveness in a particular domain of major life activity" (pp. 22-23). Although the author notes that several HSQ items were removed from the scale and replaced with activities thought to be more important indicators of major life functioning, limited information is provided regarding content development and item validation in the test manual.

The BFIS includes both a 23 item scale as well as a semi-structured follow-up interview. For 15 of the scale items, parents are asked to rate the difficulty of observed functioning in major life activities compared to other children of the same age. The remaining questions involve providing descriptive information about the child. The 15 scaling items are evaluated according to a 10-point Likert scale, with possible ratings of *Not at All* (0), *Somewhat* (1-2), *Mild* (3-4),

Moderate (5-7), and *Severe* (8-9). All BFIS items utilize the deficit measurement method in which the focus is on estimating the degree to which an individual is impaired as compared to positive measurement which focuses on normal variation in human development. It should also be noted that raters are provided with an additional omnibus code for items that do not apply to the child being evaluated. Most parents will be able to complete the BFIS rating form in approximately 5-10 minutes with an additional 15-30 minutes for the follow-up interview. The interview is not standardized and can be used, as an adjunct measure, to obtain additional information about elevated ratings.

Specific Description

Domain and Summary Scores

Each of the BFIS scaling items represents a separate primary domain of psychosocial impairment and were developed to sample the following areas: (1) social interactions with mother, (2) social interactions with father, (3) school performance, (4) social interactions with siblings, (5) neighborhood play, (6) activities in the community, (7) visiting other people's homes, (8) play at school, (9) managing money, (10) self-care, (11) completing chores, (12) completing homework, (13) ability to follow rules, (14) interactions with adults, and (15) playing sports. Domain items combine to yield separate Home-School (9 items) and Community-Leisure (6 items) summary scores. A separate summary score based upon the number of items that are rated as impaired can also be calculated. Operational descriptions of the BFIS domains and summary scores are not provided in the manual.

Test Materials

In order to use the BFIS, users must purchase the manual directly from the test publisher at www.guilford.com or through a retail distributor. Reproducible rating forms and interview

protocols are provided in the back of the manual. By purchasing the manual, users are provided with unlimited rights to reproduce rating forms and other related materials for individual use. Thus, once purchased, the BFIS can be administered on an unlimited basis with no additional cost to the user except for the nominal cost of copying the scale. Scoring and normative information are contained within the manual.

Individual items are easy to understand and ask raters to assess functioning over the past six months. Additional instructions are provided to estimate the functioning levels of children taking psychiatric medication as to how they would perform if not taking their medication. The consistent use of positively phrased items prevents confusion and provides for better discrimination between individuals with elevated impairment and those functioning at expected levels. The test manual is well-written, clear, and fairly well organized into sections that cover the construct of impairment, development of the BFIS, factor analysis and scale construction, normative sample, reliability, validity, and scoring and interpretation. A case example is also provided to help users with scoring and interpretation of the instrument.

Interpretation

There are several steps to interpreting the BFIS, First, the raw scores for each primary domain item can be interpreted in isolation, with higher ratings (5-9) indicating potentially elevated levels of impairment in that specific area of functioning. Second, the requisite items for each composite domain can be averaged to create a corresponding summary score. All individual item raw scores and summary impairment scores are converted to norm-referenced percentile ranks. Scores below the 84th percentile are generally interpreted as falling at expected levels. Those in the 85th- 92nd percentiles are interpreted as evidence of *borderline impairment*, scores between the 93rd and 95th percentile can be considered *mildly impaired*, those between the 95th

and 98th percentile can be considered *moderately impaired*, and those at the 99th percentile are interpreted as *severely impaired*. Finally, the number of items rated at the 93rd percentile or higher can be summed and interpreted by its corresponding percentile rank using the guidelines listed above. More detailed interpretive guidelines are not provided, although it is implied that the examiner may simultaneously interpret item and summary scores in order to make treatment recommendations.

Technical Adequacy

Test Construction and Item Analysis

Many of the BFIS items were retained from the 16 items in the original HSQ. Using task analysis of construct definitions, a review of the impairment literature, and an examination of items on other measures, several items were added, dropped, and/or modified. Although an extensive discussion is provided regarding the modifications and construction of the scaling format, no additional information is provided about how items were developed or selected for inclusion in the final version of the BFIS.

Normative Sample

The normative sample consisted of 1,800 children ages 6-17, with ratings completed by their parents. An independent research company was contracted to obtain completed scales on at least 1,800 children, with at least 75 boys and 75 girls represented in each of the 12 age groups. A total of 1,922 parent ratings were obtained with at least 80 girls and 80 boys in each age group. In order to remediate oversampling in several demographic areas, the sample was randomly reduced by 6% (n = 122) to align better with population estimates. The normative sample was constructed to be nationally representative using census data from 2000, and stratified according to demographic variables such as ages, gender, education, region, ethnicity, and household

income. Information about the distribution of cases across age brackets were not provided although it would appear that all of the ages were adequately represented based on the summary of sample characteristics provided in the manual. Although the various geographic regions were adequately sampled, no information was available regarding the locations and or type of communities where normative data was obtained. Interestingly, over 22% of the parents who completing ratings for the normative sample indicated that their child had a diagnosed psychological or medical disorder.

Reliability

Internal consistency was evaluated using Cronbach's alpha for the domain and summary scores. Average Cronbach's alpha coefficients for the Home-School Community-Leisure factors were .95 and .96 respectively. Interestingly, the alpha coefficient for the primary domain scores was .97, indicating a high degree of consistency across the items. Test-retest reliability was estimated by having a sample of parents ($N = 86$) complete a second BFIS 3-5 weeks after the completion of the original. Pearson product-moment correlations between the first and second administrations ranged from .56-.89 for the primary domain items and from .86-.87 for the summary scores. Inter-rater reliability was not assessed. It should be noted that no reliability data were provided for the number of impaired items summary score index.

Validity

Construct Validity. Principal components analysis was conducted prior to eliminating cases from the total standardization sample. Missing data were treated using imputation of mean raw scores for each domain. Initial results revealed two factors that had eigenvalues greater than 1. All 15 items loaded strongly on the first factor which accounted for over 65% of the variance. The second factor consisted mostly of community-related items and accounted for an additional

7% of the variance. Orthogonal and Oblique rotation procedures were utilized to disentangle potential underlying dimensions that were obfuscated due to the correlated vectors. Both procedures resulted in the identification of a Home-School (38% of variance) and Community-Leisure (34% of variance) two factor structure. Both factors were highly correlated (r = .68), indicating a high degree of shared variance (46%) between the two dimensions. No structural validity evidence was provided for the impaired domains summary score in the test manual, therefore clinical interpretation of that indicator is not recommended (AERA, APA, NCME. 1999).

Criterion Validity. Criterion validity was estimated by evaluating the association between BFIS ratings and external measures. Correlations between the BFIS and various scores from the BRIEF ranged from .60-.89 whereas coefficients with the ADHD -IV rating scale ranged from .56-.73. The moderate to large correlations were interpreted as evidence of strong relationships between the BFIS and scales designed to assess clinical conditions such as ADHD. Interestingly, no attempt was made to evaluate potential relationships between the BFIS and extant measures of psychosocial impairment. Rationale as to why the author failed to include additional measures (e.g., social-emotional rating scales) in these validation studies was not provided.

Diagnostic Validity. Given the large number of parents in the normative sample that reported that their children had a clinical diagnosis, sufficient data were available to evaluate the discriminative properties of the BFIS with respect to clinical status. The results of several ANOVA studies indicated statistically significant mean summary score differences in children diagnosed with ADHD, specific learning disability, motor coordination disorder, developmental delay (e.g., intellectual disability), seizure disorder, Tourette's syndrome, autism spectrum

disorder, depression, and bipolar disorder, when compared to controls. Additional discrimination analysis using effect size estimates and chi-square tests indicated that children with ADHD demonstrated the most pervasive and consistent impact across the various BFIS domains, even when compared to results from the developmental delay and autism spectrum groups. These results may be an artifact of the fact that almost 10% of the normative sample included children who had been diagnosed with ADHD.

Commentary and Recommendations

The BFIS is relatively easy to administer and interpret within clinical practice and may provide useful information for appraising impairment in children and adolescents across several domains of life functioning. As a norm-referenced empirically-based assessment tool it is a welcome addition to the field. Additionally, its price point is fairly competitive given the fact that users bear no additional administration costs once the manual has been purchased. Despite these strengths, several significant shortcomings were noted.

The lack of information regarding content validity and individual item development is a significant limitation of the instrument. Although the author indicates that many of the items were modified from the original HSQ, curious users are forced to have to consult the relevant literature to find information as to the process and procedures that were utilized to develop and retain those individual items. This is problematic given the fact that the “domains” sampled on the BFIS essentially reflect the breadth and wording of the individual item that corresponds to each area. As a result, interpretation of individual BFIS items as reflecting domain-level content is not recommended.

Significant discrepancies between the normative sample and estimated population parameters on several demographic variables raise questions about the representativeness of the

normative sample. In some cases differences were noted as high as 15%. In general the sample reflects a significantly higher SES level than what would be expected from the general population. This may be the result of the fact that the scale was required to be completed online during the normative phase. Additionally, more details regarding the procedures and justification for eliminating cases from the original normative sample would have been helpful in understanding how the standardization sample was constructed.

The results of construct validity studies also raise significant questions about the structure and interpretation of the measure. The BFIS is principally organized and interpreted according to the two factor structure reported in the test manual. Yet, the results of principal components analysis (PCA) revealed a strong general impairment factor which the author equated with the general factor of intelligence but declined to retain. Given the discrepancies obtained between initial and secondary PCA analyses, confirmatory factor analysis (CFA) comparing model fit between the one factor and two factor solutions would have been useful. Due to the high degree of shared variance between the Home-School and Community-Leisure factors, it would have been beneficial to estimate latent factors reliability via CFA by calculating coefficient omega and omega hierarchical in order to provide a more accurate estimate of reliability given the multi-dimensional nature of the summary scales (McDonald, 1999; Reise, 2012). When subscales are created, these scales reflect performance on a general trait (global impairment) as well as the more discrete trait measured within that specific scale (home impairment, school impairment, community impairment). As a result, the subscale may appear to be sufficiently reliable however that reliability is a function of the high degree of general trait variance contained within the scale (Reise, Moore, & Haviland, 2010). In order to interpret primarily at the subscale level, it is necessary to provide users with reliability coefficients that take into account these effects.

In spite of these shortcomings, the BFIS is a welcome addition to the field and provides school psychologists with a norm-referenced measure of impairment that has potential utility for a variety of clinical contexts and applications. Nevertheless, practitioners should interpret the BFIS summary scales with caution until additional validity evidence is provided regarding their fidelity. Until then, it is recommended that the BFIS be interpreted primarily as a global measure of impairment in children and adolescents.

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