Factor Analysis of the Nisonger Child Behavior Rating Form in Children with Autism Spectrum Disorders

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The Nisonger Child Behavior Rating Form (NCBRF) is a behavior rating scale designed for children and adolescents with mental retardation. The purpose of this study was to explore the psychometric properties of the NCBRF in a sample of 330 children and adolescents with autism spectrum disorders (ASDs). Parent and teacher ratings were independently submitted to both exploratory and confirmatory factor analysis. As reported with the original validation study, parent and teacher versions shared similar but somewhat different factor structures. Social competence items showed more similarity with the original solutions than did problem behavior items. Problem behavior items were distributed into a somewhat simpler five-factor solution for both rating forms. Self-injurious and stereotypic items loaded on two distinct subscales for the teacher form, but not on the parent form. Factor loadings and internal consistencies were generally lower than those reported for the original versions but still within the acceptable range. Confirmatory factor analyses indicated good fits for the social competence items and acceptable fits for the problem behavior items. Overall, results supported the construct validity of the NCBRF in children and adolescents with ASDs.

KEY WORDS: Autism; behavior problem; children; construct validity; factor analysis; rating scale.

INTRODUCTION

Rating scales complement other assessment modalities, allow for the standardized measurement of behaviors, and save time and money. Professionals in the field of developmental disabilities probably rely more on rating scales than those in many areas of psychology and psychiatry because of the nature of the clinical populations. Rating scales are used in the diagnostic process and to measure social and problem behavior.

In the field of autism spectrum disorders (ASDs), several rating scales have been developed to assist in the diagnostic process and to quantify the severity of symptoms. The Autism Behavior Checklist (Krug, Arick, & Almond, 1980), Gilliam Autism Rating Scale (Gilliam, 1995), Autism Screening Questionnaire (ASQ; Berument, Rutter, Lord, Pickles, & Bailey, 1999), and Social Communication Questionnaire (SCQ; Ehlers, & Gillberg, 1993; Ehlers, Gillberg, & Wing, 1999) are examples. The situation is different when it comes to the measurement of problem behavior. To our knowledge, no instruments have been developed specifically for individuals with ASDs. Researchers and clinicians have the option of using rating scales intended for typically-developing individuals or those used for individuals with mental retardation. The use of rating scales intended for typically-developing children can have several short-
comings, including unknown psychometric properties in individuals with developmental disabilities and inappropriate content and norms.

Since Aman’s (1991) review of the literature and conclusion that there was a relative paucity of instruments to measure problem behavior in children and adolescents with mental retardation, the area has received more attention. Researchers have adapted certain instruments designed for adults to assess younger individuals (e.g., Reiss & Valentí-Hein, 1994). Instruments developed largely with older samples have also been used with younger populations. For instance, Rojahn and Helsel (1991) and Brown, Aman, and Havercamp (2002) reported on the psychometric properties of the Aberrant Behavior Checklist (ABC; Aman, Singh, Stewart, & Field, 1985a, 1985b) with children and adolescents. Finally, certain rating scales have been developed specifically for children and adolescents with developmental disabilities. The Developmental Behavioural Checklist (DBC; Einfeld & Tonge, 1995, 2002) and the Nisonger Child Behavior Rating Form (NCBRF; Aman, Tassé, Rojahn, & Hammer, 1996; Tassé, Aman, Hammer, & Rojahn, 1996) are two examples. Both of these scales possess distinct strengths over one another and have good psychometric properties (Aman et al., 1996; Einfeld & Tonge, 1995; Hastings, Brown, Mount, & Cormack, 2001).

The NCBRF was modified from another scale, the Child Behavior Rating Form (CBRF; Edlebrock, 1985). The original items were reworded to make them more concrete and specific, and a total of 16 items measuring self-injurious, stereotypic, and internalizing behaviors were added to the original 55-item CBRF. In addition, 10 items measuring social competence were retained. The ratings of 326 parents and 260 teachers of clinic-referred children and adolescents with developmental disabilities were submitted to independent exploratory factor analyses. The factor structures of both versions were very similar. Social competence items were distributed on two subscales and problem behavior items were distributed on six. The NCBRF is gaining popularity (see Rush & Frances, 2000). It has been used in research studies (e.g., Mudford et al., 2000) and has been translated to French (as well as several other languages), showing a similar factor structure and good psychometric properties (Tassé, Girouard, & Morin, 2000; Tassé & Lecavalier, 2000).

The purpose of this study was to explore the factor structure and psychometric properties of the NCBRF in a sample of children and adolescents with ASDs. The NCBRF seemed particularly well suited for this population. The six problem behavior subscales contain items measuring behaviors that are often seen in individuals with ASDs such as stereotypic, ritualistic, self-injurious, and hyperactive behaviors. To our knowledge, this is the first study to explore the psychometric properties of a scale developed for young individuals with developmental disabilities in a sample comprising children and adolescents with ASDs. Such a study seems desirable if researchers and clinicians are to use the instrument with this population. It can also shed some light on the structure of problem behavior in individuals with ASDs.

METHOD

Procedure

The participants were derived from a combination of two samples. The first sample consisted of participants who were referred to the Nisonger Center for Mental Retardation and Developmental Disabilities Autism Spectrum Disorders Clinic for a comprehensive interdisciplinary assessment. The NCBRF is part of the intake packet and is completed by parents and teachers prior to the family’s appointment. Parents are mailed a packet with several questionnaires, including the NCBRF. They are asked to complete the instruments and to obtain ratings from their child’s primary teacher. Once the questionnaires are completed, they are mailed back to the clinic coordinator who schedules an appointment. This sample consisted of consecutive cases seen at the clinic between 1996 and 2001. In order to be included in the final analysis, participants had to be diagnosed with Autistic Disorder, Asperger’s Disorder, or Pervasive Developmental Disorder Not Otherwise Specified (PDD/NOS) by the multidisciplinary team. Evaluations generally included an assessment of intellectual and adaptive skills, a structured interview with the Autism Diagnostic Interview-Revised (ADI-R; Lord, Rutter, & Le Couteur, 1994), the completion of rating scales such as the Childhood Autism Rating Scale (CARS; Schopler, Reichler, DeVellis, & Daly, 1980) and GARS, as well as medical, motor, and speech and language components. Of the 143 cases seen between 1996 and 2001, 77 had completed NCBRFs and met the inclusion criteria for the current study.