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Validity study of the Autism Spectrum Disorders-Diagnostic for Children (ASD-DC)

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ABSTRACT

The Autism Spectrum Disorders-Diagnostic for Children (ASD-DC) is a 40-item Likert format scale designed to serve in the diagnosis of children and adolescents from 2 to 16 years of age. The reliability and factor structure of the scale have been established in previous research. Studies 1 and 2 were designed to evaluate the validity of the measure by establishing cut-off scores for 161 participants falling into the categories of typical development, atypical development/psychopathology, and ASD (i.e., autism, PDD-NOS, and Asperger's syndrome), as assessed by a licensed psychologist using ICD-10 and DSM-IV-TR criteria and in conjunction with standardized measures of autism (ADI-R, CARS, or CHAT) and Asperger's syndrome (CAST, GADS, or KADI). In study 3, the accuracy of ASD scores was compared with ICD-10 and DSM-IV-TR criteria for autism, PDD-NOS, and Asperger's syndrome in 219 children. The ASD-DC, which can be administered in 10–15 min proved to be a relatively accurate and valid diagnostic instrument when compared to the diagnostic methods described above. The implications of these data for further development of this scale are discussed.

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1. Introduction

Autism spectrum disorders (ASD), once considered rare, are increasingly viewed as high incidence as well as severe childhood conditions (Fombonne, 1999; Magnusson & Saemunden, 2001; Matson & Smith, 2008). Moreover, while “the spectrum” consists of five distinct disorders, autism, Pervasive

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Developmental Disorder-Not Otherwise Specified (PDD-NOS), and Asperger's syndrome are by far the most prevalent and thus have received the bulk of the research with respect to nosology and diagnosis (Matson, 2007; Matson & Boisjoli, 2007; Matson & Wilkins, 2008). These disorders are neurodevelopmental in origin and are characterized by onset in early childhood and deficits in social interaction and communication along with restricted and/or repetitive behaviors (Lam, Aman, & Arnold, 2006; Wing, 1997).

Given the effectiveness of early intervention, diagnosis at an early age is warranted (Fox, Keller, Grede, & Bartosz, 2007; Ingersoll & Gergans, 2007; Zachor, Isaacs, & Merrick, 2006). However, residual core symptoms of ASD are likely to be evident for many children even with extensive remediation efforts (Accordino, Comer, & Heller, 2007; Ellis, Aláí-Rosales, Glenn, Rosales-Ruiz, & Greenspoon, 2006; Goldsmith, LeBlanc, & Sautter, 2007; Naoi, Yokoyama, & Yamamoto, 2007; Schlosser et al., 2007). Thus, continued evaluation throughout childhood and adolescence would seem advisable.

Assessment instruments for ASD have largely focused on measuring autism and, to a lesser extent, Asperger's syndrome (Campbell, 2005; Matson & Boisjoli, 2008; Matson, Nebel-Schwalm, & Matson, 2007). A second tactic has been to look at specific deficit areas such as behavioral flexibility (Pituch et al., 2007), biological markers (Herrington et al., 2007), social skills (Matson & Wilkins, 2007), and communication (Lee, David, Rusyniak, Landa, & Newshaffer, 2007). These efforts have been invaluable in establishing the fact that these disorders can be accurately evaluated as well as in demarcating the behavioral phenomena associated with the three most prevalent ASD.

Given the current state of research on differential diagnosis, we set out to use the valuable information obtained on diagnosis to this point to establish a comprehensive, yet brief diagnostic measure that could be used for assessing autism, PDD-NOS, and Asperger's syndrome. Previously, the reliability of the measure had been established (Matson, González, Wilkins, & Rivet, *in press*). Therefore, the current paper was designed to examine the validity of the Autism Spectrum Disorders-Diagnostic for Children (ASD-DC). In Study 1, cut-off scores were established for differentiating among typical development, atypical development/psychopathology, and ASD. In Study 2, cut-off scores for differentiating among the three ASD (autism, PDD-NOS, and Asperger's) were established. Study 3 examined the validity of the ASD-DC by comparing scores to ICD-10 and DSM-IV-TR diagnostic criteria for ASD.

2. Study 1

2.1. Method

2.1.1. Participants and setting

The initial sample consisted of 161 children and adolescents (designated as children for brevity for the remainder of the paper) ages 2–16 and averaging 7.76 years of age. These children were assessed at a university outpatient clinic in Louisiana. Primary referrals were for ASD, anxiety, learning disorders, and behavior problems. Informed consent was obtained from the child's primary caregiver and consent was obtained from the child whenever possible. There were 103 boys and 58 girls in the sample. The ethnic breakdown was 78.9% Caucasian, 12.4% African American, and 8.7% of other ethnicity. Three broad groups were established following the diagnostic procedures described below: ASD, typical development, and atypical development/psychopathology.

2.1.2. Differential diagnosis

A clinical anchor for diagnosis was established for validity purposes in a two-step process. First an algorithm of ICD-10 and DSM-IV-TR symptoms was employed (American Psychiatric Association [APA], 2000; World Health Organization [WHO], 1993). These data along with clinical histories, observational information, and the results of other standardized measures of autism and Asperger's syndrome (see below) were used to arrive at a clinical consensus for the diagnosis of ASD (either autism, PDD-NOS, or Asperger's) versus no ASD. In each child's case, a licensed psychologist was involved in the process and certified the diagnosis. This method of diagnostic fidelity is considered the "gold standard" for differential diagnosis of ASD and has been used in many previous studies (e.g., Baird et al., 2006; Barthélémy et al., 1997; Constantino et al., 2003; Gillberg, 1992; Lord et al., 2000).

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