Rapid Quantitative Assessment of Autistic Social Impairment by Classroom Teachers

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ABSTRACT

Objective: Teachers routinely observe children in the naturalistic social contexts of their classrooms and provide extremely important input in the evaluation of numerous psychiatric syndromes. Their precision in ascertaining and quantifying autistic symptomatology has not previously been established. In this study, we compared teachers' ratings of autistic symptomatology with those derived from parents, expert clinicians, and trained raters. **Method:** A total of 577 subjects (ages 4–18 years) with ($n = 406$) and without ($n = 171$) pervasive developmental disorders (PDDs) were assessed by one parent and one current teacher using the Social Responsiveness Scale, a quantitative measure of autistic traits. PDD subjects were assessed by expert clinicians, the Autism Diagnostic Interview-Revised, and/or the Autism Diagnostic Observation Schedule. All of the assessments were conducted during the period 1996–2006. **Results:** Teacher Social Responsiveness Scale reports exhibited strong correlations with parent reports (0.72); use of quantitative ratings from both informants resulted in extremely high sensitivity and specificity for clinical and research diagnoses of PDDs (area under receiver operating characteristics curve = .95). **Conclusions:** Rapid quantitative assessments by teachers and parents constitute a cost-effective method for measuring and tracking the severity of autistic symptomatology in both educational and clinical settings. *J. Am. Acad. Child Adolesc. Psychiatry,* 2007;46(12):1668–1676. **Key Words:** autism, rating scale, school assessment.

Pervasive developmental disorders (PDDs) represent the upper extreme of a constellation of social impairments that appear to be continuously distributed in nature (Constantino and Todd, 2003; Ronald et al., 2005; Spiker et al., 2002). The common PDDs (autistic disorder, Asperger disorder, PDD-not otherwise specified [PDD-NOS]) may share genetic origins (Lauritsen et al., 2005; Pickles et al., 2000), and there has been a gradual shift from viewing PDDs as categorical (all-or-none) disorders to entities that exist along a spectrum of severity with respect to core symptomatology. Given the relatively high prevalence of this group of disorders, currently estimated at 1 in every 150 children (Autism and Developmental Disabilities Monitoring Network Surveillance Year 2002 Principal Investigators, 2007; Fombonne, 2005), there is a need for reliable quantitative characterization of their severity using methods that are interpretable across medical, school, and psychosocial treatment settings, especially because these are the primary domains of intervention for affected children.

Traditional assessment instruments for PDDs were originally designed to establish a categorical diagnosis of autistic disorder; they are variously time intensive, and often require trained raters. A number of scales have more recently attempted to characterize possible cases of milder PDDs, Asperger disorder or PDD-NOS (see Campbell, 2005 for review and comparison); these, too, have been designed for categorical diagnostic assignment. Interrater agreement for diagnostic assignment

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has been highly problematic for these instruments, and there are not yet adequate normative data derived from them to use them as quantitative trait measures. Moreover, it has been observed that subtle adjustments in proposed criteria for differentiating the respective PDDs result in nonuniform shifts in diagnostic assignment among clinical subjects, raising fundamental questions about the robustness of a three-disorder taxonomy (Klin et al., 2005).

Recently, we developed a measurement method that was principally designed to characterize autistic symptomatology as a quantitative trait or traits; to date, we have reported normative and clinical data from studies involving more than 5,000 subjects. This method, which uses a 15-minute-long adult informant questionnaire called the Social Responsiveness Scale (SRS), capitalizes on observations of children in naturalistic social contexts, and has proven capable of capturing a wide range of symptomatology from mild to severe, differentiating children with and without clinical-level PDD symptomatology, and characterizing subtle gradations in severity within the PDD spectrum (Constantino and Todd, 2003; Constantino et al., 2003a; Constantino et al., 2000; Pine et al., 2006). This is especially relevant for the identification of milder PDD symptoms, when present, and for measuring subtle responses of core symptoms to medical, educational, and psychosocial interventions.

In this study we examined the application of this rapid quantitative assessment method to the classroom setting. Classroom teachers have distinct advantages over parents (and clinicians) in their ability to observe and quantify the day-to-day social impairments that characterize PDD. Specifically, teachers routinely observe children in the context of their natural social interactions with other children (in classrooms, lunchrooms, and playgrounds rather than at home or in a clinical setting). In contrast to most parents, teachers have had the opportunity to observe the social behavior of numerous children, which greatly enriches their sense of what does and does not constitute typical social behavior in childhood.

Although the use of teacher-informant data for diagnostic assignment has been attempted using some of the PDD rating scales referred to above, this is, to our knowledge, the first study to explore the validity of quantitative characterization of autistic symptomatology completed by classroom teachers in a large clinical sample. The present study involved children with clinically confirmed pervasive developmental disorders (additionally characterized by the Autism Diagnostic Interview-Revised [ADI-R], the Autism Diagnostic Observation Schedule [ADOS], or both), their affected and unaffected siblings, and a sample of clinical control subjects. Inclusion of siblings and the clinical control group in the sample allowed for analyses of teacher assessments across the full range of impairments in reciprocal social behavior (from mild to severe) that occur in nature. In this study quantitative assessments were completed by both teachers and parents using the SRS. Specifically, we examined whether teachers' reports of autistic symptomatology using the SRS correlated with scale scores derived from established diagnostic assessments for autism completed on the same set of children by parents or trained raters, whether teachers routinely "miss" fundamental components of the autistic syndrome captured by more time-intensive measures, and whether the use of rapid assessment by parents and teachers offers an approach to feasible, comprehensive quantitative characterization of autistic symptomatology amenable to repeated measurements in clinical and educational settings.

METHOD

Sample

The study involved 577 children from 323 families currently enrolled in either our ongoing longitudinal study of social development at the Washington University (WU) School of Medicine or the Autism Genetic Resource Exchange (AGRE, a national gene and tissue bank for autism). Sample characteristics are summarized in Table 1.

The WU sample is composed of families whose children are in treatment in the Child and Adolescent Psychiatry Service at WU or families of child psychiatric patients from the greater St. Louis metropolitan area who consecutively responded to advertisements or recruitment letters from their physicians to enroll in a longitudinal study of social development in children. Any child with a psychiatric diagnosis documented by a child psychiatrist and at least one male sibling (whether affected or unaffected) was eligible for inclusion in the study. Because a primary objective of the study was to compare the social developmental trajectories of children with PDDs with those of children with other psychiatric conditions, families were preferentially recruited from clinics and physicians treating substantial populations of PDD subjects. For this sample, 18% of the families who initially expressed interest and enrolled in the study never returned the first set of mail-in assessments, even after repeated telephone follow-up; these families were consequently dropped from the study.

The AGRE registry is composed primarily of multiple-incidence autism families. Participants for this project were recruited from a pool of AGRE families who had completed all of the standard