I'm not a robot

 Anxiety often co-occurs with autism spectrum disorder (ASD), yet there are few valid and reliable instruments for measuring anxiety in youth with ASD. This paper describes the modification of the Pediatric Anxiety Rating Scale for youth with ASD (PARS-ASD) and systematic psychometric evaluation in a well-characterized sample of 116 youth (age 5-17 years) with ASD and a range of anxiety symptoms. The clinician-administered PARS-ASD was modified with input from parents of children with ASD and an expert panel. Unlike many other anxiety measures, the PARS-ASD is more focused on behavioral manifestations of anxiety, versus verbal expression. Results provide preliminary support for the psychometric properties of the PARS-ASD. The internal consistency of the PARS-ASD was 0.90. The PARS-ASD was strongly correlated with parent-report anxiety measures (rs = .62-.68), supporting convergent validity. In support of divergent validity, correlations between the PARS-ASD and parent ratings of ASD symptoms, social withdrawal, stereotypy, hyperactivity, inappropriate speech, and repetitive behaviors were low (rs = .13-.32). The PARS-ASD was moderately correlated with parent-reported irritability (r = .52). The PARS-ASD showed good test-retest reliability (ICCs = .75-.82) and inter-rater reliability (ICCs = .70-.92). Overall, results support the use of the PARS-ASD for assessing anxiety in youth with ASD. Keywords: autism spectrum disorder, anxiety, assessment, Pediatric Anxiety Rating Scale, validity, reliability Many youth with autism spectrum disorder (ASD) have anxiety, but it can be difficult to assess anxiety with existing measures. We modified the Pediatric Anxiety Rating Scale for youth with ASD (PARS-ASD) and tested the new measure in a group of 116 youth (age 5-17 years) with ASD. The PARS-ASD is an interview that a clinician usually completes with the child and parent together. We modified the interview questions and scoring instructions based on feedback from parents of children with ASD and from a panel of experts in ASD and anxiety. Unlike many other anxiety measures, the PARS-ASD relies less on a child's verbal expression of anxiety and more on signs that a parent can easily observe. Training clinicians to administer and score the PARS-ASD was uncomplicated, and raters showed excellent agreement on video-recorded interviews. Youth who were not currently in treatment for anxiety had stable PARS-ASD scores with repeat measurement over a one-month period. The PARS-ASD is a useful clinician-rated measure of anxiety in youth with ASD and fills a gap for assessing anxiety in this population. Anxiety is among the most common co-occurring psychiatric features in youth with autism spectrum disorder (ASD), with significantly higher rates than the general pediatric population (van Steensel & Heeman, 2017; White, Oswald, Ollendick, & Scahill, 2009). Based on a meta-analysis of 31 studies, approximately 40% of youth with ASD have at least one anxiety disorder (van Steensel, Bogels, & Perrin, 2011). Co-occurring anxiety in youth with ASD is associated with additional social impairment, self-injurious behavior, depressive symptoms, gastrointestinal problems, and parental stress (Kerns et al., 2015a; Mazurek et al., 2013; Sukhodolsky et al., 2008). However, despite the high prevalence and associated impairment of co-occurring anxiety, there is an acknowledged dearth of valid and reliable anxiety measures for youth with ASD (Lecavalier et al., 2014). Better outcome measures are needed to make progress in intervention research for youth with ASD and anxiety (Lecavalier et al., 2014). Currently, the two most common types of anxiety outcome measures are parent and clinician ratings. In a prior report, we presented evidence supporting the reliability and validity of a new parent-rated measure of anxiety (Scahill et al., 2019). Here we focus on the psychometrics of a modified version of the clinician-administered Pediatric Anxiety Rating Scale (PARS; RUPP Anxiety Study Group, 2002). The original PARS was developed by the RUPP Anxiety Study Group (2002) to build a clinician-rated outcome measure for treatment studies of anxiety in children and adolescents age 6 to 17 years. The PARS is a semi-structured interview designed to collect information on the current severity of anxiety from the child and parent. The information gathered allows the clinician to consider symptom severity against other youth with anxiety. Thus, it can be used to complement parent- and self-reported ratings. In youth with anxiety disorders ascertained from the general population, the PARS is reliable, valid, and sensitive to change with treatment (e.g., Ginsburg, Keeton, Drazdowski, & Riddle, 2011; RUPP Anxiety Study Group, 2001, 2002; Walkup et al., 2008). The original PARS has been used as an outcome measure in several anxiety treatment studies in youth with ASD and average or above average IQ (Storch et al., 2013; Storch et al., 2015; White et al., 2013; Wood et al., 2015; Wood et al., 2019). To date, only one study has examined the psychometric properties of the PARS in youth with ASD (Storch et al., 2012). In that study of 72 youth with ASD without intellectual disability (age 7-17 years) seeking treatment for anxiety, the PARS demonstrated excellent inter-rater reliability and test-retest reliability. Internal consistency was 0.59; convergent validity with the parent-rated Multidimensional Anxiety Scale for Children (MASC-P; March, 1998) was modest (r = 0.40), and results for divergent validity were mixed. In addition, in a sample of 36 non-treatment-seeking youth with ASD, Kerns et al. (2015b) reported low sensitivity of the unmodified PARS for detecting clinically significant anxiety, concluding that the original PARS often misses cases of anxiety disorders in youth with ASD. These results suggest that the standard version of the PARS may not be well-suited for assessing anxiety in youth with ASD. First, the original PARS is highly reliant on language, making it difficult to assess youth with limited expressive language skills. Even when relying on the parent as the primary informant, the parent may not know how to answer interview questions that depend on verbal expressions of anxiety by youth with ASD. Second, anxiety disorders and ASD may show symptom overlap and may be difficult to disentangle (Bearss et al., 2016; Kerns & Kendall, 2012). For example, concern about changes in routine is common in youth with ASD. Hypervigilance about changes in routine, however, may reflect anxiety about immediately upcoming events. This nuance may not be captured by the original PARS. These measurement challenges are not unique to the PARS; they apply to the majority of anxiety measures used with youth with ASD (Lecavalier et al., 2014). Based on these considerations, and with the permission of the original PARS developers, we modified the PARS for youth with ASD (PARS-ASD). Modifications were guided by findings from six focus groups with 48 parents of children with ASD and anxiety that explored the behavioral manifestations of anxiety in youth with ASD (Bearss et al., 2016). In addition, a panel of experts in ASD and anxiety, with input from the original PARS developers, reviewed the modifications to advise and maintain the content validity of the PARS. The purpose of the current study was to evaluate the psychometric properties, by examining the internal consistency, convergent and divergent validity, test-retest reliability, and inter-rater reliability of the modified PARS for ASD. Specifically, we evaluated convergent validity with two parent-rated measures of anxiety and divergent validity with parent-rated measures of general behavior problems, repetitive behavior, and overall ASD symptoms. We hypothesized that the correlations between the PARS-ASD and other anxiety measures, measured via parental report rather than interview like the PARS-ASD, would be strong and statistically significant. Conversely, we hypothesized low, non-significant correlations between the PARS-ASD and measures of general behavior problems, repetitive behavior, and ASD symptoms. This study used data from a multi-site, multi-stage measure development project to advance anxiety measurement in youth with ASD (Bearss et al., 2016; Scahill et al., 2019). The sites were Emory University, Ohio State University, and the Children's Hospital of Philadelphia. The institutional review boards at each site approved the study. We recruited participants through website postings at each institution, flyers to parent support groups in each region, parents of children who received clinical care within each site, and families who participated previously in research and agreed to be re-contacted. Each site enrolled youth (age 5 to 17 years) with ASD to participate in a detailed clinical assessment at Time 1. A subset of participants returned for two additional visits, each 7 to 21 days apart, to evaluate the test-retest reliability of the PARS-ASD. All parents signed the consent document, and youth who were able provided assent to participate. Parents were the primary informants for the PARS-ASD interviews. Approximately 75% of the interviews included the parent and the youth participant in a joint interview; in approximately 25% of cases, the interview was conducted with the parent only (e.g., young children and participants with cognitive limitations). For additional information about the study design, see Scahill et al. (2019). The clinician who led the PARS-ASD modifications (LS) trained study clinicians on the PARS-ASD to reliability. Training included attending a teleconference to become familiar with the instrument, watching a training video followed by group discussion for calibration, and scoring additional video-recorded interviews to demonstrate reliability. Total training time was less than four hours. To meet the reliability standard, each clinician independently rated two PARS-ASD interviews, each of which was within 12.5% of the trainer's total score. To evaluate inter-rater reliability, six clinicians trained to reliability independently rated 30 video-recorded PARS-ASD interviews. These interviews (approximately 25% of total of Time 1 interviews) were randomly selected from each site. Recordings with poor quality audio were excluded and the next interview from that site was used. The original PARS is a semi-structured interview designed to assess the severity of anxiety in youth aged 6-17 years over the previous week (RUPP Anxiety Study Group, 2002). It was not designed as a diagnostic measure. The interview, which usually includes the parent and child, begins with a symptom checklist with items reflecting social anxiety, separation anxiety, generalized anxiety, specific phobia, and panic. Endorsed symptoms are then rated on seven dimensions (number of symptoms, frequency, distress, physical symptoms, avoidance, interference at home, and interference outside of home) from 0 to 5, with higher scores reflecting greater severity. For these seven dimensions, the total score ranges from 0 to 35. By convention, however, the Number of Symptoms and Physical Symptoms dimensions are not included in the total score, resulting in a total score ranging from 0 to 25 for the remaining five dimensions (RUPP Anxiety Study Group, 2001; Storch et al., 2012; Walkup et al., 2008; Wood et al., 2015). This convention is based on concerns that 1) the Number of Symptoms dimension may be highly skewed and not related to overall severity of anxiety (e.g., if symptoms are numerous, but mild), and 2) the Physical Symptoms dimension may be confounded by common side effects of anxiety medications, such as restlessness and insomnia (RUPP Anxiety Study Group, 2001). Thus, the Number of Symptoms and Physical Symptoms dimensions were not included in the modified PARS. Revisions to the original PARS symptom checklist were guided by themes and content from six parent focus groups (Bearss et al., 2016) in a series of teleconference discussions with a panel of investigators. The work group made use of these qualitative findings to reduce dependence on youth verbal expression in favor of behavioral manifestations of anxiety. For example, we removed the item about nightmares with a separation theme and the item about expressed fear in anticipation of separation. We added items based on themes in the focus group such as excessive worry about time (e.g., being late) and being highly vigilant about changes in routine. The work group also reviewed the anchor points for rating the five anxiety severity dimensions. The anchor points provide guidance for scoring each dimension. For example, the dimension on distress (Pervasiveness of Anxiety) in the PARS-ASD includes additional details about length of anxiety episodes (e.g., only a few seconds, several minutes) to help the clinician make an accurate rating. Revisions of the symptom checklist and severity anchor points were then reviewed with our expert panel for clarity and to ensure that revisions were consistent with manifestations of anxiety rather than ASD. Overall, we maintained the basic structure (i.e., symptom checklist followed by anxiety severity dimensions) and scoring (i.e., a single score to reflect total anxiety severity) of the original PARS. Also in keeping with the original PARS, the front page for clinician instructions noted that if the life circumstances of the past week were unusual (e.g., family vacation or natural disaster), the clinician should inquire about the period immediately preceding the unusual circumstance. On average, the PARS-ASD takes no more than 20 minutes to administer. Readers who are interested in the PARS-ASD can contact the senior author (LS). We selected the following measures for analyzing divergent validity: The ABC is a 58-item, informant-based measure for assessing treatment effects in people with developmental disabilities. Each item is scored as 0 (not at all a problem), 1 (slight problem), 2 (moderately serious problem), or 3 (severe problem). We chose the ABC as a measure of divergent validity because it is a widely used measure of behavior problems in children with developmental disorders, but does not have a specific focus on anxiety. It also demonstrates good psychometric properties in children with ASD (Kaat, Lecavalier, & Aman, 2014). The ABC has five subscales: Irritability (15 items), Lethargy/Social Withdrawal (16 items), Stereotypic Behaviors (7 items), Hyperactivity/Noncompliance (16 items), and Inappropriate Speech (4 items). The CYBOCS-ASD is a reliable and valid semi-structured interview designed to rate the current severity of repetitive behavior in children and adolescents with ASD or other developmental disorders. Once the current repetitive behaviors are identified, they are rated on: Time Spent, Interference, Distress, Resistance, and Control. Each of these items is scored from 0 to 4, yielding a total score from 0 to 20, with higher scores indicating greater severity. The SCQ is a 40-item measure of ASD symptoms, based on the Autism Diagnostic Interview (LeCouteur et al., 1989). Participants' parents completed the Lifetime version, which focuses on the child's entire developmental history. The recommended SCQ cutoff score to indicate ASD is 15 (Rutter et al., 2003), although other studies have adopted a lower cutoff score of 11 to maximize sensitivity and specificity (e.g., Schendel et al. 2012; Wiggins et al. 2015). We selected the following measures for analyzing convergent validity: The PRAS-ASD is a 25-item, parent-reported measure of anxiety symptoms in youth with ASD (age 5-17 years). Parents rate the frequency and impairment of anxiety symptoms on a 4-point scale (0 = not present; 1 = present sometimes, not a real problem; 2 = often present and a problem; 3 = very frequent and a major problem) over the past two weeks. The items were developed from a bank of items generated from the series of focus groups with parents discussing anxiety in youth with ASD (Bearss et al., 2016). This was followed by a large-scale online survey of parents with factor and item response theory analyses resulting in a 25-item measure with a single factor (Scahill et al., 2019). It was an integral component of the detailed clinical assessment and test-retest evaluation that included the PARS-ASD. Parents completed the SCARED, a 41-item measure of childhood anxiety disorders, including general anxiety disorder, separation anxiety disorder, panic disorder, social anxiety disorder, and school phobia. Each item is scored as 0 (not true or hardly ever true), 1 (somewhat true or sometimes true), or 2 (very true or often true). The SCARED has shown acceptable reliability, validity, sensitivity, and specificity in cognitively able youth with ASD (Stern, Gadgil, Blakeley-Smith, Reaven, & Hepburn, 2014). We used the following measures to characterize the sample (in addition to the SCQ, described above): The parent-rated Vineland-II is a standardized assessment of adaptive behaviors in three domains: Socialization, Communication, and Daily Living. Higher standard scores (M = 100; SD = 15) indicate better adaptive skills. The SB-5 is a widely used standardized test of cognitive ability. Participants completed the abbreviated battery as an estimate of full scale IQ. The abbreviated battery includes one nonverbal subtest (object series/matrices) and one verbal subtest (vocabulary). Participants included children between the ages of 5 and 17 years, with a diagnosis of ASD (based on expert clinical opinion supported by the Autism Diagnostic Observation Schedule [ADOS; Lord et al., 2000] and SCQ), and with at least mild anxiety via parent-report. Participants were on no medication or stable medication (minimum of 6 weeks on same dose with no planned changes in the next 6 weeks). Children who needed immediate treatment for a psychiatric condition or serious behavioral problem (based on the study assessment) were excluded from further participation the study and referred to an appropriate clinical service. We did not have study funds allocated for community involvement, so we were unable to directly involve community stakeholders. We have invited people with autism and their family members to help us develop our dissemination strategy for study results. In addition, the principal investigators at all three sites are involved with the clinical assessment and treatment of children with autism and anxiety, as well as with parent groups to support parents of children with autism. They brought these experiences to the design and conduct of the study. Analyses were performed in SAS v.9.4 (Cary, NC) or R v.3.5 (Vienna, Austria), and statistical significance was evaluated at the p = 0.05 level. First, we estimated the internal consistency of the PARS-ASD with Cronbach's alpha. Next, the validity of the PARS-ASD was assessed by calculating the Pearson correlations between the PARS-ASD total score and other measures of anxiety (PRAS-ASD and SCARED) for convergent validity and with the CYBOCS-ASD, ABC subscales, and SCQ for divergent validity. Differences in PARS-ASD correlations with measures of anxiety versus PARS-ASD correlations with other measures were tested using Fisher's r-to-z transformation. Third, we analyzed the test-retest reliability using intraclass correlation coefficients (ICC) in a subset of participants who returned for visits at Time 2 and Time 3. Finally, we examined the PARS-ASD inter-rater reliability using ICC analyses in 30 video-recorded PARS-ASD interviews independently rated by six clinicians. All ICCs were calculated using single rater, two-way mixed effects models assessing absolute agreement. After completing the analyses with the full sample, we repeated most analyses (with the exception of the inter-rater reliability analysis due to small sample size) with subsets of the sample to examine whether the results differed based on participant IQ (< 70 vs. ≥ 70) or age (< 12 vs. ≥ 12). One hundred and twenty-nine children were screened in-person for the study; 121 met eligibility criteria and were enrolled (the remaining eight children did not meet diagnostic criteria for ASD as determined by the study clinicians). Five eligible participants had incomplete data and were excluded from analyses. Thus, Time 1 data included 116 participants (see Table 1). Almost all (95%) of participants fell above the SCQ cutoff score of 11. Forty-eight participants were assessed at Emory University, 38 were assessed at the Children's Hospital of Philadelphia, and 30 were assessed at Ohio State University. PARS-ASD total scores did not differ by site (p = .18). In the full sample of 116 children, 53 were on at least one psychotropic medication: monotherapy n = 24; two medications n = 21; three medications n = 8. The stated reason for medication treatment varied. Anxiety was stated as the target in 24 participants. Stimulant was the most commonly reported class of medication either as monotherapy or in combination (n = 27). The second most common class of medication was SSRI (n = 16). In terms of anxiety severity at Time 1, 25 of the participants scored at least one standard deviation above the published mean on the PRAS-ASD (Scahill et al., 2019); 13 participants scored at least 1.5 standard deviations above this mean. Demographic and Clinical Characteristics of Youth with ASD (n = 116) Characteristic n (%) Sex Female 24 (20.7) Male 92 (79.3) Race White 78 (67.2) Black or African American 22 (19.0) Asian 3 (2.6) Multiracial 13 (11.2) Ethnicity Hispanic or Latino 14 (12.1) Non-Hispanic or Latino 99 (85.3) Unknown/Not Reported 3 (2.6) Age at Assessment (years) (Mean ± SD) 11.8 ± 3.2 Educational Placement Regular class public or private school 65 (56) Regular class + special education 25 (21.6) Special education program 14 (12.1) Home school 12 (10.3) Maternal education High School Graduate/GED 9 (7.8) Some college/Associate degree 34 (29.3) Bachelor Degree 45 (38.8) Graduate/Professional Degree 28 (24.1) At least one parent in home (n = 115) 112 (97.4) Vineland Adaptive Behavior Scales, 2nd edition Vineland - Daily Living Skills (n = 112) 76.9 ± 14.0 Vineland - Socialization (n = 111) 69.1 ± 15.0 Vineland - Communication (n = 112) 76.2 ± 14.6 Stanford-Binet Abbreviated Battery IQ Standard Score (n = 115) 89.3 ± 23.5 (range = 47-133) Social Communication Questionnaire Total Score 20.1 ± 6.6 Aberrant Behavior Checklist (ABC) (n = 115) ABC-Irritability 12.1 ± 9.9 ABC-Social Withdrawal 11.4 ± 8.3 ABC-Stereotypy 6.0 ± 5.2 ABC-Hyperactivity 16.8 ± 11.3 ABC-Inappropriate Behavior 4.5 ± 3.5 PARS-ASD Total Score 11.6 ± 5.4 Parent-Rated Anxiety Scale for ASD Total Score 31.0 ± 15.6 SCARED Total Score (n = 115) 23.2 ± 14.6 CYBOCS-ASD (n = 115) 12.6 ± 3.2 At Time 1, the PARS-ASD demonstrated excellent internal consistency (alpha = .90). Table 2 shows Pearson correlations between the PARS-ASD and other study measures. Correlations ranged from r values of .13 to .68. The PARS-ASD showed the strongest correlations with the PRAS-ASD (r = .68) and SCARED total score (r = .62). These r values between the PARS-ASD and anxiety measures were significantly higher than the correlations between the PARS-ASD and parent-rated ABC subscales, parent-rated SCQ, clinician-rated CYBOCS-ASD (all p values < .01 on r-to-z transformation). The PARS-ASD was moderately correlated with the ABC Irritability subscale (r = .52). This pattern of results was largely consistent across IQ and age subgroups. Correlations between the PARS-ASD Total Score and Other Clinical Measures Measure N Pearson r (95% CI) with PARS-ASD PRAS-ASD 116 0.68 (0.57, 0.77)** SCARED Total Score 115 0.62 (0.49, 0.72)** ABC – Irritability 115 0.52 (0.37, 0.64)** ABC – Social Withdrawal 115 0.32 (0.14, 0.47)* ABC – Stereotypy 115 0.30 (0.12, 0.46)* ABC – Hyperactivity 115 0.32 (0.14, 0.47)* ABC – Inappropriate Speech 115 0.30 (0.12, 0.46)* SCQ 116 0.24 (0.06, 0.40) CYBOCS-ASD 115 0.13 (−0.06, 0.30) Of the 116 participants at Time 1, 62 (49 males, 13 females; mean age of 11.23 ± 3.29 years) returned for Time 2 after a mean of 12.37 ± 2.64 days (range 7 to 20) and Time 3 after a mean of 12.03 ± 2.89 days (range 7 to 17). Common reasons for non-participation in the repeat visits included scheduling conflicts and perceived burden due to distance to the medical center. As shown in Table 3, the test-retest ICC values were .78 (from Time 1 to Time 2), .82 (from Time 2 to Time 3), and .75 (from Time 1 to Time 3). This general pattern of test-retest reliability results held across IQ and age subgroups. Test-Retest Intraclass Correlation Coefficients for PARS-ASD across Three Visits (n = 62) PARS-ASD Total Score Test-Retest Correlation Matrix Mean (SD) Total Score Time 1 Total Score Time 2 Time 1 12.89 (4.98) -- -- Time 2 12.16 (4.96) 0.78, p < 0.001 -- Time 3 11.03 (5.16) 0.75, p < 0.001 0.82, p < 0.001 Table 4 shows the inter-rater reliability for the six raters on 30 video-recorded PARS-ASD interviews. All ICC values across the five PARS-ASD dimensions and the total score were in the good or excellent range (Cicchetti, 1994), showing a high degree of reliability across the raters: Frequency of Anxiety Symptoms ICC = .92; Pervasiveness of Anxiety ICC = .86; Avoidance ICC = .70; Interference Inside Home ICC = .87; Interference Outside Home ICC = .74; Total Score ICC = .88. Inter-Rater Reliability of PARS-ASD Dimensions and Total Score (n = 30) PARS-ASD ICC (Single) Frequency 0.916 Pervasiveness 0.856 Avoidance 0.701 Interference inside the home 0.873 Interference outside of home 0.742 Total score 0.882 This paper describes the modification of the PARS for youth with ASD and systematic psychometric evaluation in a well-characterized sample of youth with ASD and varying levels of anxiety. The results provide preliminary support for the validity and reliability of the PARS-ASD based on indices of internal consistency, convergent and divergent validity, test-retest reliability, and inter-rater reliability. Strengths of the study include a relatively large sample of youth with ASD with a range of anxiety symptoms ascertained in a multi-site study. The PARS-ASD was modified with input from focus groups with parents of children with ASD and with a panel of experts in ASD and anxiety. The internal consistency of 0.90 for the PARS-ASD Total Score was excellent, demonstrating better internal consistency than the original PARS with youth without ASD (RUPP, 2002) and with ASD (Storch et al., 2012). The high internal consistency value is particularly impressive given the small number of PARS-ASD severity items that compose the Total Score. An alpha value higher than .90 would suggest that some items may be redundant and the scale could be shortened (Tavakol & Dennick, 2011). As expected, the PARS-ASD showed the strongest correlations with the two parent-report measures of anxiety, the PRAS-ASD and the SCARED, which supports convergent validity. The r values of .68 and .62, respectively, indicate that the PARS-ASD may provide unique and complementary information beyond the PRAS-ASD and SCARED. A potential strength of a clinician-administered interview over a parent-reported questionnaire is the opportunity for the clinician to gather additional information to distinguish anxiety symptoms and ASD. In support of divergent validity, correlations between the PARS-ASD and parent ratings on the ABC Social Withdrawal, Stereotypy, Hyperactivity, and Inappropriate Speech subscales were low, although still statistically significant. The non-significant correlation between the PARS-ASD and CYBOCS-ASD (r = .13) was lower than expected, given other research showing a relationship between anxiety and repetitive behaviors (e.g., Rodgers, Glod, Connolly, & McConachie, 2012). The non-significant correlation between the PARS-ASD and SCQ (r = .24) aligns with prior research supporting the independence of anxiety severity and ASD symptom severity in youth with ASD (e.g., Renno & Wood, 2013). The moderate correlation between the PARS-ASD and the ABC Irritability subscale (r = .52) is not surprising, given parental impressions that emotional outbursts and anxiety are often related for their children on the spectrum (Bearss et al., 2016). Recent research also links emotion regulation difficulties (which the ABC Irritability subscale may capture to a degree) and anxiety in individuals with ASD (Conner, White, Scahill, & Mazefsky, 2020; Mazefsky et al., 2013). Similar to the original PARS with youth with ASD reported by Storch and colleagues (2012), the PARS-ASD showed good to excellent test-retest reliability and inter-rater reliability. The impressive test-retest values across three visits indicate that the PARS-ASD is not vulnerable to random fluctuation in scores, which is critical for detecting treatment effects in a clinical trial (Kraemer, 1991). Future research could examine the sensitivity of the PAS-ASD to detect change in an anxiety treatment trial. Training clinicians to reliability on the PARS-ASD was not time-consuming, which is also promising for future trials. Psychometric studies of the original PARS excluded children with IQ scores < 70 (RUPP, 2002; Storch et al., 2012). In these prior studies, the high reliance on the child's verbal abilities to report anxiety symptoms to parents or clinicians was not an issue. The modifications of the PARS-ASD reduce reliance on language in favor of observable behavioral manifestations of anxiety in children with ASD, which is consistent with findings from parent focus groups (Bearss et al., 2016). These modifications may be especially relevant for younger children and youth with intellectual disability. A strength of the current study is that our sample included children with IQ scores ranging from 47 to 133, with 24% having an IQ < 70. The PARS-ASD also includes several items to help distinguish anxiety from core ASD behaviors. Thus, the sensitivity of the PARS-ASD in detecting anxiety symptoms may be improved from the original PARS, which showed low sensitivity in a small sample of youth with ASD, although this still needs to be tested in future studies (Kerns et al., 2015b). Validating measures that can disentangle overlapping symptoms between anxiety and ASD was recently named a top priority for advancing research in this field (Vasa, Keefer, Reaven, South, & White, 2018). As with the original PARS, the PARS-ASD aims to assess overall anxiety severity, without being tied to a specific anxiety disorder. Given that many children with ASD present with more than one anxiety disorder, this approach could be useful for tracking treatment progress and outcome (Leyfer et al., 2006; Simonoff et al., 2008). In keeping with the practical demands of clinical trials, the PARS-ASD is relatively brief to administer and score. When assessing anxiety in youth with ASD, a multi-informant, multi-method approach is recommended (e.g., Vasa et al., 2016). Therefore, although the PARS-ASD is not a diagnostic instrument, it could complement parent-rated and self-reported measures of anxiety in children with ASD, such as the PRAS-ASD (Scahill et al., 2019) and the Anxiety Scale for Children-ASD (ASC-ASD; Rodgers et al., 2016), respectively. Several study limitations deserve mention. Although we deliberately included youth with a range of anxiety symptoms, this was a sample of convenience that may not be representative of all youth with ASD. Indeed, based on the reported level of maternal education, most participants were Caucasian from higher socioeconomic backgrounds. In addition, the study did not include a diagnostic assessment of co-occurring psychiatric conditions, which limits the characterization of our sample. Conclusions about convergent and divergent validity are limited by the sole reliance on parent-report measures; future psychometric evaluations of the PARS-ASD should include self-report, teacher-report, and behavioral observational measures. In particular, the divergent validity of the PARS-ASD should be further examined for constructs such as irritability and emotion regulation difficulties. Despite these limitations, this study supports the utility of the PARS-ASD in assessing anxiety in youth with ASD. A brief, valid, and reliable anxiety measure for children with ASD fills a gap in research and clinical practice. The modified PARS-ASD relies primarily on behavioral manifestations of anxiety. As a clinician-administered measure, it is well-suited for placebo-controlled pharmacological studies or psychosocial trials using masked assessment of treatment outcome. The authors are grateful to Drs. Kenneth Gadow, Golda Ginsburg, Mark Riddle, and John Walkup, who provided feedback about the measure modifications. Funding: This work was supported by grants from the National Institute of Mental Health (R01MH099021, PI: Scahill; F32MH111166, PI: Maddox) and funding from the Marcus Foundation. Aman MG, & Singh NN (2017). Aberrant Behavior Checklist manual, 2nd edition. East Aurora, NY: Slosson Educational Publications, Inc. [Google Scholar] Bearss K, Taylor CA, Aman MG, Whittemore R, Lecavalier L, Miller J, … Scahill L (2016). Using qualitative methods to guide scale development for anxiety in youth with autism spectrum disorder. Autism, 20, 663–672. doi: 10.1177/1362361315601012 [DOI] [PubMed] [Google Scholar] Birmaher B, Brent DA, Chiappetta L, Bridge J, Monga S, & Baugher M (1999). Psychometric properties of the Screen for Child Anxiety Related Emotional Disorders (SCARED): A replication study. Journal of the American Academy of Child and Adolescent Psychiatry, 38, 1230–1236. doi: 10.1097/00004583-199910000-00011 [DOI] [PubMed] [Google Scholar] Cicchetti DV (1994). Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. Psychological Assessment, 6, 284–290. doi: 10.1037/1040-3590.6.4.284 [DOI] [Google Scholar] Conner CM, White SW, Scahill L, & Mazefsky CA (2020). The role of emotion regulation and core autism symptoms in the experience of anxiety in autism. Autism Advance online publication. doi: 10.1177/1362361320904217 [DOI] [PMC free article] [PubMed] [Google Scholar] Gadow KD, & Sprafkin JN (2002). Child Symptom Inventory 4: Screening and norms manual. Stony Brook, New York: Checkmate Plus. [Google Scholar] Ginsburg GS, Keeton CP, Drazdowski TK, & Riddle MA (2011). The utility of clinicians ratings of anxiety using the Pediatric Anxiety Rating Scale (PARS). Child & Youth Care Forum, 40, 93–105. doi: 10.1007/s10566-010-9125-3 [DOI] [PMC free article] [PubMed] [Google Scholar] Kaat AJ, Lecavalier L, & Aman MG (2014). Validity of the Aberrant Behavior Checklist in children with autism spectrum disorders. Journal of Autism and Developmental Disorders, 44, 1103–1116. doi: 10.1007/s10803-013-1970-0 [DOI] [PubMed] [Google Scholar] Kerns CM, & Kendall PC (2012). The presentation and classification of anxiety in autism spectrum disorder. Clinical Psychology: Science and Practice, 19, 323–347. doi: 10.1111/cpsp.12009 [DOI] [Google Scholar] Kerns CM, Kendall PC, Zickgraf H, Franklin ME, Miller J, & Herrington J (2015a). Not to be overshadowed or overlooked: Functional impairments associated with comorbid anxiety disorders in youth with ASD. Behavior Therapy, 46, 29–39. doi: 10.1016/j.beth.2014.03.005 [DOI] [PubMed] [Google Scholar] Kerns CM, Maddox BB, Kendall PC, Rump K, Berry L, Schultz RT, … Miller J (2015b). Brief measures of anxiety in non-treatment-seeking youth with autism spectrum disorder. Autism, 19, 969–979. doi: 10.1177/1362361314558465 [DOI] [PMC free article] [PubMed] [Google Scholar] Kraemer HC (1991). To increase power in randomized clinical trials without increasing sample size. Psychopharmacology Bulletin, 27, 217–224. [PubMed] [Google Scholar] Lecavalier L, Wood JJ, Halladay AK, Jones NE, Aman MG, Cook EH, … Scahill L (2014). Measuring anxiety as a treatment endpoint in youth with autism spectrum disorder. Journal of Autism and Developmental Disorders, 44, 1128–1143. doi: 10.1007/s10803-013-1974-9 [DOI] [PMC free article] [PubMed] [Google Scholar] LeCouteur A, Rutter M, Lord C, Rios P, Robertson S, Holdgrafer M, & McLennan J (1989). Autism Diagnostic Interview: A standardized investigator-based instrument. Journal of Autism and Developmental Disorders, 19, 363–387. doi: 10.1007/BF02212936 [DOI] [PubMed] [Google Scholar] Leyfer OT, Folstein SE, Bacalman S, Davis NO, Dinh E, Morgan J, … Lainhart JE (2006). Comorbid psychiatric disorders in children with autism: Interview development and rates of disorders. Journal of Autism and Developmental Disorders, 36, 849–861. doi: 10.1007/s10803-006-0123-0 [DOI] [PubMed] [Google Scholar] Lord C, Risi S, Lambrecht L, Cook EH, Leventhal BL, DiLavore PC, … Rutter M (2000). The Autism Diagnostic Observation Schedule–Generic: A standard measure of social and communication deficits associated with the spectrum of autism. Journal of Autism and Developmental Disorders, 30, 205–223. doi: 10.1023/A:1005592401947 [DOI] [PubMed] [Google Scholar] March J (1998). Manual for the multidimensional anxiety scale for children. Toronto: Multi-Health Systems Inc. [Google Scholar] Mazefsky CA, Herrington J, Siegel M, Scarpa A, Maddox BB, Scahill L, & White SW (2013). The role of emotion regulation in autism spectrum disorder. Journal of the American Academy of Child and Adolescent Psychiatry, 52, 679–688. doi: 10.1016/j.jaac.2013.05.006 [DOI] [PMC free article] [PubMed] [Google Scholar] Mazurek MO, Vasa RA, Kalb LG, Kanne SM, Rosenberg D, Keefer A, … Lowery LA (2013). Anxiety, sensory over-responsivity, and gastrointestinal problems in children with autism spectrum disorders. Journal of Abnormal Child Psychology, 41, 165–176. doi: 10.1007/s10802-012-9668-x [DOI] [PubMed] [Google Scholar] Renno P, & Wood JJ (2013). Discriminant and convergent validity of the anxiety construct in children with autism spectrum disorders. Journal of Autism and Developmental Disorders, 43, 2135–2146. doi: 10.1007/s10803-013-1767-1 [DOI] [PMC free article] [PubMed] [Google Scholar] Research Units on Pediatric Psychopharmacology (RUPP) Anxiety Study Group. (2001). Fluvoxamine for the treatment of anxiety disorders in children and adolescents. New England Journal of Medicine, 344, 1279–1285. doi: 10.1056/NEJM200104263441703 [DOI] [PubMed] [Google Scholar] Research Units on Pediatric Psychopharmacology (RUPP) Anxiety Study Group. (2002). The Pediatric Anxiety Rating Scale (PARS): Development and psychometric properties. Journal of the American Academy of Child & Adolescent Psychiatry, 41, 1061–1069. doi: 10.1097/00004583-200209000-00006 [DOI] [PubMed] [Google Scholar] Rodgers J, Glod M, Connolly B & McConachie H (2012). The relationship between anxiety and repetitive behaviours in autism spectrum disorder. Journal of Autism and Developmental Disorders, 42, 2404–2409. doi: 10.1007/s10803-012-1531-y [DOI] [PubMed] [Google Scholar] Rodgers J, Wigham S, McConachie H, Freeston M, Honey E, & Parr JR (2016). Development of the Anxiety Scale for Children with autism spectrum disorder (ASC-ASD). Autism Research, 9, 1205–1215. doi: 10.1002/aur.1603 [DOI] [PubMed] [Google Scholar] Roid GH (2003). Stanford-Binet Intelligence Scales, Fifth Edition. Rolling Meadows, IL: Riverside Publishing. [Google Scholar] Rutter M, Bailey A, & Lord C (2003). The Social Communication Questionnaire. Los Angeles, CA: Western Psychological Services. [Google Scholar] Scahill L, Lecavalier L, Schultz RT, Evans AN, Maddox BB, Pritchett J, … Edwards MC (2019). Development of the parent-rated anxiety scale for youth with autism spectrum disorder. Journal of the American Academy of Child and Adolescent Psychiatry, 58, 887–896. doi: 10.1016/j.jaac.2018.10.016 [DOI] [PubMed] [Google Scholar] Scahill L, McDougle CJ, Williams SK, Dimitropoulos A, Aman MG, McCracken JT, … Vitiello B (2006). Children's Yale-Brown Obsessive Compulsive Scale modified for pervasive developmental disorders. Journal of the American Academy of Child and Adolescent Psychiatry, 45, 1114–1123. doi: 10.1097/01.chi.0000220854.79144.e [DOI] [PubMed] [Google Scholar] Schendel DE, DiGuiseppi C, Croen LA, Fallin MD, Reed PL, Schieve LA, … Yeargin-Allsopp M (2012). The Study to Explore Early Development (SEED): A multisite epidemiologic study of autism by the Centers for Autism and Developmental Disabilities Research and Epidemiology (CADDRE) Network. Journal of Autism and Developmental Disorders, 42, 2121–2140. doi: 10.1007/s10803-012-1461-8 [DOI] [PMC free article] [PubMed] [Google Scholar] Simonoff E, Pickles A, Charman T, Chandler S, Loucas T, & Baird G (2008). Psychiatric disorders in children with autism spectrum disorders: Prevalence, comorbidity, and associated factors in a population-derived sample. Journal of the American Academy of Child & Adolescent Psychiatry, 47, 921–929. doi: 10.1097/CHI.0b013e318179964f [DOI] [PubMed] [Google Scholar] Sparrow SS, Cicchetti DV, & Balla DA (2005). Vineland Adaptive Behavior Scales, Second Edition. Livonia, MN: Pearson Assessments. [Google Scholar] Stern JA, Gadgil MS, Blakeley-Smith A, Reaven JA, & Hepburn SL (2014). Psychometric properties of the SCARED in youth with Autism spectrum disorder. Research in Autism Spectrum Disorders, 8, 1225–1234. doi: 10.1016/j.rasd.2014.06.008 [DOI] [PMC free article] [PubMed] [Google Scholar] Storch EA, Arnold EB, Lewin AB, Nadeau JM, Jones AM, De Nadai AS, … Murphy TK (2013). The effect of cognitive-behavioral therapy versus treatment as usual for anxiety in children with autism spectrum disorders: A randomized, controlled trial. Journal of the American Academy of Child and Adolescent Psychiatry, 52, 132–142.e2. doi: 10.1016/j.jaac.2012.11.007 [DOI] [PubMed] [Google Scholar] Storch EA, Lewin AB, Collier AB, Arnold E, De Nadai AS, Dane BF, … Murphy TK (2015). A randomized controlled trial of cognitive-behavioral therapy versus treatment as usual for adolescents with autism spectrum disorders and comorbid anxiety. Depression and Anxiety, 32, 174–181. doi: 10.1002/da.22332 [DOI] [PMC free article] [PubMed] [Google Scholar] Storch EA, Wood JJ, Ehrenreich-May J, Jones AM, Park JM, Lewin AB, & Murphy TK (2012). Convergent and divergent validity and reliability of the Pediatric Anxiety Rating Scale in youth with autism spectrum disorders. Journal of Autism and Developmental Disorders, 42, 2374–2382. doi: 10.1007/s10803-012-1489-9 [DOI] [PubMed] [Google Scholar] Sukhodolsky DG, Scahill L, Gadow KD, Arnold LE, Aman MG, McDougle CJ, … Vitiello B (2008). Parent-rated anxiety symptoms in children with pervasive developmental disorders: Frequency and association with core autism symptoms and cognitive functioning. Journal of Abnormal Child Psychology, 36, 117–128. doi: 10.1007/s10802-007-9165-9 [DOI] [PubMed] [Google Scholar] Tavakol M, & Dennick R (2011). Making sense of Cronbach's alpha. International Journal of Medical Education, 2, 53–55. doi: 10.5116/ijme.4dfb.8dfd [DOI] [PMC free article] [PubMed] [Google Scholar] van Steensel FJ, Bogels SM, & Perrin S (2011). Anxiety disorders in children and adolescents with autistic spectrum disorders: A meta-analysis. Clinical Child and Family Psychology Review, 14, 302–317. doi: 10.1007/s10567-011-0097-0 [DOI] [PMC free article] [PubMed] [Google Scholar] van Steensel FJ, & Heeman EJ (2017). Anxiety levels in children with autism spectrum disorder: A meta-analysis. Journal of Child and Family Studies, 26, 1753–1767. doi: 10.1007/s10826-017-0687-7 [DOI] [PMC free article] [PubMed] [Google Scholar] Vasa RA, Keefer A, Reaven J, South M, & White SW (2018). Priorities for advancing research on youth with autism spectrum disorder and co-occurring anxiety. Journal of Autism and Developmental Disorders, 48, 925–934. doi: 10.1007/s10803-017-3320-0 [DOI] [PubMed] [Google Scholar] Vasa RA, Mazurek MO, Mahajan R, Bennett AE, Bernal MP, Nozzolillo AA, … Coury DL (2016). Assessment and treatment of anxiety in youth with autism spectrum disorders. Pediatrics, 137, S115–S123. doi: 10.1542/peds.2015-2851J [DOI] [PubMed] [Google Scholar] Walkup JT, Albano AM, Piacentini J, Birmaher B, Compton SN, Sherrill JT, … Kendall PC (2008). Cognitive behavioral therapy, sertraline, or a combination in childhood anxiety. New England Journal of Medicine, 359, 2753–2766. doi: 10.1056/NEJMoa0804633 [DOI] [PMC free article] [PubMed] [Google Scholar] White SW, Ollendick T, Albano AM, Oswald D, Johnson C, Southam-Gerow MA, … Scahill L (2013). Randomized controlled trial: Multimodal Anxiety and Social Skill Intervention for adolescents with autism spectrum disorder. Journal of Autism and Developmental Disorders, 43, 382–394. doi: 10.1007/s10803-012-1577-x [DOI] [PMC free article] [PubMed] [Google Scholar] White SW, Oswald D, Ollendick T, & Scahill L (2009). Anxiety in children and adolescents with autism spectrum disorders. Clinical Psychology Review, 29, 216–229. doi: 10.1016/j.cpr.2009.01.003 [DOI] [PMC free article] [PubMed] [Google Scholar] Wiggins LD, Reynolds A, Rice CE, Moody EJ, Bernal P, Blaskey L, … Levy SE (2015). Using standardized diagnostic instruments to classify children with autism in the study to explore early development. Journal of Autism and Developmental Disorders, 45, 1271–1280. doi: 10.1007/s10803-014-2287-3 [DOI] [PMC free article] [PubMed] [Google Scholar] Wood JJ, Ehrenreich-May J, Alessandri M, Fujii C, Renno P, Laugeson E, … Storch EA (2015). Cognitive behavioral therapy for early adolescents with autism spectrum disorders and clinical anxiety: A randomized, controlled trial. Behavior Therapy, 46, 7–19. doi: 10.1016/j.beth.2014.01.002 [DOI] [PMC free article] [PubMed] [Google Scholar] Wood JJ, Kendall PC, Wood KS, Kerns CM, Seltzer M, Small BJ, … Storch EA (2019). Cognitive behavioral treatments for anxiety in children with autism spectrum disorder: A randomized clinical trial. JAMA Psychiatry. Advance online publication. doi: 10.1001/jamapsychiatry.2019.4160 [DOI] [PMC free article] [PubMed] [Google Scholar] Objective: To describe the development and psychometric properties of the Pediatric Anxiety Rating Scale (PARS), a clinician-rated instrument for assessing the severity of anxiety symptoms associated with common DSM-IV anxiety disorders (social phobia, separation anxiety disorder, and generalized anxiety disorder) in children. Method: As part of a multisite study of the efficacy of fluvoxamine, 128 children (aged 6-17) and their parents were interviewed weekly with the PARS. Data from multiple raters on a subsample of children (using live and videotaped interviews) were used to evaluate interrater reliability. Internal consistency, test-retest reliability, and validity (convergent, divergent) also were evaluated. Results: The PARS showed high interrater reliability, adequate test-retest reliability, and fair internal consistency. Convergent and divergent validity were satisfactory. PARS scores were sensitive to treatment and paralleled change in other measures of anxiety symptoms and global improvement. Conclusions: The PARS is a useful clinician-rated instrument for assessing pediatric anxiety symptoms, severity, and impairment, particularly in treatment studies. Further study of the psychometric properties is warranted. Clinician ratings of anxiety hold the promise of clarifying discrepancies often found between child and parent reports of anxiety. The Pediatric Anxiety Rating Scale (PARS) is a clinician-administered instrument that assesses the frequency, severity, and impairment of common pediatric anxiety disorders and has been used as a primary outcome measure in several landmark treatment trials. However, no data on nonanxious youth have been published. The purpose of this study was to address this gap by examining clinician's ratings of anxiety on the PARS in a volunteer sample of youth without anxiety disorders (n = 84; ages 7–12; 51% female, 75% Caucasian). The nonanxious sample was comprised of youth with (At-risk; n = 36) and without (Healthy; n = 48) anxious parents. Data were also used to evaluate the reliability (i.e., internal consistency), convergent, and divergent validity of the clinician-rated PARS. In addition, a receiver operating curve analysis was used to determine optimum cut off scores indicative of clinical levels of anxiety by comparing PARS scores between these nonanxious youth and a clinically anxious sample (n = 77) randomized in the Research Units of Pediatric Psychopharmacology (RUPP) anxiety study (RUPP 2001). Results indicated that anxious and nonanxious youth were significantly different on all PARS severity items. Optimum cutoff scores of 11.5 (5-item total score) and 17.5 (7-item total score) discriminated youth with and without anxiety disorders. Cronbach alphas for the Healthy and At-risk sample were .90 and .91 and .75 and .81 for the 5- and 7-item total PARS scores respectively, supporting the measure's internal consistency among nonanxious youth. PARS total scores were positively correlated with other measures of anxiety (i.e., the Screen for Child Anxiety Related Emotional Disorders) for the At-risk but not Healthy subsample. PARS scores were not significantly correlated with depressive symptoms (i.e., Children's Depression Inventory). Overall, findings support the utility of clinician's assessments of anxiety symptoms for nonanxious youth. Using the PARS can help facilitate determining whether a child's anxiety level is more similar to those with or without an anxiety disorder. Keywords: Anxiety, Children, Adolescents, Rating scales, Assessment Anxiety disorders are among the most common psychopathologies in childhood and are known to confer significant impairment across social, academic, and familial domains of functioning (Rapee et al. 2009). An increase in research devoted to these disorders over the past two decades has enhanced our understanding of their phenomenology, etiology, and treatment. The emergence of anxiety-specific assessment instruments has facilitated this research. To date, the majority of these assessment instruments have been child and parent self-report measures. These types of measures have numerous advantages and functions (e.g., screening, measuring changes in symptoms over time), but the correspondence between informants is low, raising questions about which informant is more valid (Comer and Kendall 2004; Engel et al. 1994; Klein 1991). Moreover, these measures capture symptom frequency but do not assess impairment related to anxiety symptoms. An alternative to parent- and child-report measures of anxiety are clinician-rated instruments. Such methods rely on an interview format (usually semi-structured) which helps minimize the discrepancy between child and parent reports by combining and synthesizing information. These measures include the assessment of anxiety-related impairment in the child's functioning. Clinician-rated instruments also reduce bias associated with using only one informant. Consequently, these types of instruments have the potential to improve on the assessment and understanding of psychopathology in general and of child anxiety specifically. For these and other reasons, clinician-rated instruments have been developed to assess symptoms of pediatric obsessive compulsive disorder (Children's Yale-Brown Obsessive Compulsive Scale (CY-BOCS; Scahill et al. 1997), tic disorders (Yale Global Tic Severity Scale (YGTSS; Leckman et al. 1989), and depressive disorders (e. g, Children's Depression Rating Scale-Revised (CDRS-R; Poznanski and Mokros 1996). Currently, only one clinician-rated instrument (other than the PARS) exists for assessing the severity and impairment associated with the most common pediatric anxiety disorders, namely the Hamilton Anxiety Rating Scale (Hamilton 1959; HAM-A). The HAM-A is not in wide use, assesses predominately physiological or somatic anxiety symptoms, was originally developed for use with adults, and the psychometric properties have only been examined in adolescents (Clark and Donovan 1994). Thus, an additional measure for assessing pediatric anxiety was needed. To address this gap in the literature, the Pediatric Anxiety Rating Scale (PARS) was developed. Modeled after the CY-BOCS and YGTSS, the PARS is a clinician-rated instrument that assesses the frequency, severity, and associated impairment of separation anxiety (SAD), social phobia (SOP), and generalized anxiety (GAD) symptoms in youth ages 6–17 (Research Units of Pediatric Psychopharmacology; RUPP 2002). The PARS was originally developed by the principal investigators of the RUPP anxiety trial to evaluate treatment response of fluvoxetine for youth with SAD, SOP, and GAD (RUPP 2001). Importantly, the measure assesses global anxiety severity and impairment across these anxiety disorders (RUPP 2002). The need for this type of measure was supported by data revealing high rates of symptom overlap and comorbidity between anxiety disorders (particularly SAD, SOP, and GAD, see RUPP 2001) that was not captured by other instruments that focus on single disorders. Other clinician-rated instruments, such as the Anxiety Disorders Interview Schedule for Children (ADIS-C) and the Kiddie-Schedule for Affective Disorders and Schizophrenia (K-SADS) ascertain diagnoses and yield severity/impairment scores for each individual disorder, but do not yield a global severity or impairment score for symptoms across disorders. Thus, the PARS makes an important incremental contribution to current approaches for assessing pediatric anxiety. Initial psychometric data on the PARS using a clinical sample of anxious children were acceptable (RUPP 2002). Specifically, in a sample of 128 children who met criteria for SAD, SOP and/or GAD (ages 6–17), Cronbach's alpha coefficient for the 5-item PARS Total Score at baseline was 0.64. Inter-rater reliability (based on intraclass correlation coefficients) for the PARS Total Score was 0.97, and test–retest reliability (both obtained prior to treatment) for the PARS 5-item Total Score was 0.55. The PARS Total Score at baseline was positively correlated with other measures of anxiety (e.g., the SCARED-child and parent versions, and CBCL-anxiety/depression subscale and internalizing subscales). Finally, the PARS Total Score was sensitive to pharmacological treatment aimed at reducing anxiety (RUPP 2001, 2002). These initial data supported the utility of clinician ratings of anxiety for anxious youth. Because of the unique contribution of the PARS for assessing pediatric anxiety, its use has gained in popularity in clinical and research settings. The PARS has now been used in at least eight clinical trials and it was the primary scalar measure of efficacy in several landmark clinical trials (RUPP 2001; Walkup et al. 2008). Despite its growing use, there are no published data on this measure for children who do not have an anxiety disorder. The usefulness of the PARS as both a clinical screening instrument and a research tool to track changes in anxiety symptoms across these common and often comorbid disorders would be increased by psychometric information for youth who do not have an anxiety disorder. It is important to establish not only whether a child's post-treatment score is significantly lower than pre-treatment, which has been demonstrated in previous trials, but how pre- and post-treatment scores compare to scores of children who do not have an anxiety disorder. Such a comparison is useful in determining clinically significant improvement and remission of these anxiety symptoms. While definitions of clinically significant change vary (e.g., Jacobson and Truax 1991) data on a nonanxious sample of youth will facilitate determining whether a child's anxiety level and functioning (as measured by scores on the PARS) prior and subsequent to treatment fall outside the range of an anxious population and within the range (or closer to the mean) of a nonanxious population. This type of information is essential for characterizing the severity of anxiety symptoms and will inform decision making with respect to the need for treatment. To address these issues, this study provided preliminary data on the utility of clinician's assessments of anxiety using the PARS among a sample of children without anxiety disorders (n = 84). Specifically, along with descriptive data, we examined reliability (i.e., internal consistency), and convergent and divergent validity. We then added a sample of youth with anxiety disorders from the RUPP anxiety study, matched on age (n = 77), in order to evaluate optimum cut-off scores that might differentiate the anxiety levels of youth with and without an anxiety disorder (total N = 161). The total nonanxious sample consisted of 84 children, ages 7–12 (mean 9.07 years; 51% female, 75% Caucasian, 17% African American; 5% Asian; 4% Other). Families were recruited via print advertising and word of mouth as part of two studies: one study recruited anxious parents to examine the impact of an anxiety prevention program for their nonanxious offspring (At-risk n = 36; Ginsburg 2009) and the other study recruited nonanxious parent and child controls (Healthy n = 48; Ginsburg and Riddle 2005). Additional demographic data on each subsample, including the age distribution, are presented in Table 1. No differences were found between groups on age, gender, parental education, and family income. However, At-risk compared to Healthy, children were more likely to be Caucasian (p = .01). Participants were deemed non-anxious based on the absence of an anxiety disorder as determined by a diagnostic interview (i.e., the Anxiety Disorders Interview Schedule for Children; ADIS-C) conducted by trained evaluators. Confirmation that these youth were non-anxious was also based on mean scores on questionnaire measures of anxiety and related symptomatology which fell within the normal range of standardized norms (see Table 2). Across these subsamples, a total of 101 families were evaluated. For the current study, 3 families were excluded because they were outside the age range of 7–12, 9 families were excluded because the child met diagnostic criteria for an anxiety disorder, 1 family was excluded because of developmental delays, and the remaining 4 were excluded because they did not complete the PARS. None of the included children met diagnostic criteria for any other psychiatric disorder. As noted, in order to facilitate comparisons on the PARS between youth with and without anxiety disorders and to conduct the ROC analyses specifically, data from the published RUPP anxiety study for youth ages 7–12 (n = 77; total N = 161) were used in the present study (see RUPP (2001); for study details and sample characteristics). Sociodemographic characteristics of nonanxious sample (N = 84) Healthy sample (n = 48) At-risk sample (n = 36) Mean age (range) 9.3 (7–12 years) 8.72 (7–11 years) Age distribution (%) Ages 7, 8, 9 16, 15, 19% 30, 14, 25% Ages 10, 11, 12 27, 15, 8% 14, 17, 0% n % n % Gender (female) 27 56 16 44 Ethnicity Caucasian 30 63 33 91 Black (non-Hispanic) 13 27 1 3 Asian 3 6 1 3 Other/unknown 2 4 1 3 Healthy sample (n = 48) At-risk sample (n = 36) n % n % Total family income $61,000 30 63 28 78 Mother's education level High school (or less) 6 12 1 3 Some college 8 17 4 11 College degree 19 40 17 47 Advanced degree 15 31 13 36 Other 0 0 1 3 Healthy sample (n = 48) At-risk sample (n = 36) n % n % Father's education level High school (or less) 9 19 3 8 Some college 6 13 4 11 College degree 16 33 7 19 Advanced degree 16 33 19 54 Other/unknown 1 2 3 8 Descriptive statistics for nonanxious sample (N = 84) Healthy sample (n = 48) At-risk sample (n = 36) Raw scores Raw scores M (SD) Range Cronbach α M (SD) Range Cronbach α PARS total (5-item) 3.23 (3.10) 0–12 .90 5.36 (3.28) 0–11 .75 PARS total (7-item) 5.00 (4.39) 0–17 .91 8.22 (4.62) 0–17 .81 SCARED-child report 20.32 (14.09) 0–74 .93 24.33 (12.94) 1–63 .91 SCARED-parent report 7.45 (6.67) 0–26 .87 17.20 (10.11) 0–48 .90 CDI-short form 1.56 (2.05) 0–10 .66 1.86 (2.55) 0–10 .77 After obtaining written informed consent and assent, trained Ph.D. or M.A. level clinicians conducted the diagnostic interviews, administered the PARS, and collected all other measures listed below. Child inclusion/exclusion criteria were: (1) absence of a psychiatric disorder (as determined by the ADIS-C), (2) no medical or psychiatric conditions contraindicating study participation, and (3) not currently receiving psychological or pharmacological treatment for anxiety reduction. Diagnostic interviews were administered first, followed by the PARS. Parents and children were interviewed with the ADIS-C individually, during which time the child or parent completed questionnaires. The final sample of 84 nonanxious youth reflects those who met full inclusion/exclusion criteria (e.g., between ages 7 and 12, child did not have any psychiatric disorder; child was not currently in treatment). No families refused participation. Child diagnostic status was assessed using the Anxiety Disorders Interview Schedule for DSM-IV Child Version (ADIS-C; Silverman and Albano 1996). The interview has good test–retest reliability (r = 0.94 for the parent and r = 0.92 for the child interviews; Silverman et al. 2001) and is sensitive to treatment effects in studies of youth with anxiety disorders (Kendall et al. 1997). Inter-rater agreement for the presence or absence of an anxiety disorder (i.e., kappa) for 20% of the current sample was 100%. The Pediatric Anxiety Rating Scale (PARS; RUPP 2002) is comprised of a 50-item symptom checklist of anxiety symptoms. Information is gathered from interviews with both the child and parent(s) and each symptom is scored by the interviewing clinician as present or absent (yes/no) during the past week. Endorsed symptoms are then collectively (i.e., integrating both child and parent information) rated by the clinician on 7 dimensions of global severity, using a 6-point scale (0 for none, and 1–5 for minimal to extreme). These dimensions are: (1) number of symptoms (none to more than 10 symptoms present), (2) frequency (none to several hours per day), (3) severity of distress associated with anxiety symptoms (none to extreme), (4) severity of physical symptoms (none to extreme), (5) avoidance (none to extreme), (6) interference at home (no interference to totally or almost totally unable to function at home), and (7) interference out-of-home (no interference to totally or almost totally unable to function out of home). In the original publication and in pharmacological clinical trials, the total score was calculated by summing 5 of the 7 items (excluding the "number of symptoms" item and the "physical symptoms" item). The 5 item-total score was used in order to avoid overlap with symptoms related to selective serotonin reuptake inhibitor (SSRI) side effects in these clinical trials. In this paper, results are reported for both 5-item (range 0–25) and 7-item (range 0–35) total scores. Both the 5- and 7-item total scores are presented so that users may have flexibility in using the measure's total scores based on their needs (e.g., those using the PARS in medication trials may opt for the 5-item total to facilitate comparisons with other medication trials; those using the PARS as a screening tool may prefer to use the 7-item total score). The PARS and instructions for administration, is available online at the Article Plus feature at www.jaacap.com. While no specific training requirements have been set forth by the authors of the PARS, in the current study, prior to administering the PARS, all evaluators reviewed the measure and relevant publications, watched a minimum of 2 PARS administrations by a senior interviewer, administered a minimum of 2 PARS in the presence of a senior interviewer, and obtained inter-rater reliability (kappa) of .85 for the severity ratings on a minimum of 2 cases (either live or using a videotaped administration made by developers of the PARS). During the study, weekly supervision with the first author was held to discuss all assessments and review scores. The Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al. 1997, 1999) is a 41-item, child- and parent-report instrument that assesses symptoms of DSM-IV anxiety disorders. Severity of symptoms were rated using a 0–2 point rating scale with 0 meaning not true or hardly ever true, 1 meaning sometimes true, and 2 meaning true or often true. A total score was obtained by summing all the items and higher scores reflect higher anxiety (range 0–82). A score ≥25 may indicate the presence of an anxiety disorder. The measure has shown very good psychometric properties in two different large clinical samples (Birmaher et al. 1997, 1999), a community sample (Muris et al. 1998), and a sample of clinically referred children (Monga et al. 2000). Depression symptoms were assessed by child-report on the 10-item Children's Depression Inventory—Short Form (CDI-S; Kovacs 1992). A total score was computed by summing all items and higher scores reflect more depressive symptoms. Raw scores (range 0–20) were converted to standardized T-scores (range 0–100). A T-score ≥65 is considered clinically significant. The mean T-score for the Healthy sample was 45.33 (SD = 6.43) and 46.17 (SD = 8.09) for the At-risk sample. Sample descriptive statistics on the PARS are presented in Table 2. Participants' mean scores were below the clinical range on all measures. Table 3 presents the frequency of the 50 individual PARS items for Healthy youth, At-risk youth, and youth with an anxiety disorder. As noted, data on youth with anxiety disorders were taken from the published RUPP Anxiety study (see RUPP 2001 for study details and sample characteristics). Frequency of individual PARS items by study status Symptom Healthy(N = 48)# (%) At-risk(N = 36)# (%) Anxious(N = 77)# (%) Social anxiety Participate in group activities 2 (4%) 5 (14%) 39 (51%)a,b Go to social events 1 (2%) 2 (6%) 31 (40%)a,b Talk with strangers 6 (13%) 4 (11%) 43 (56%)a,b Talk on phone 3 (6%) 3 (8%) 17 (22%) Talk in group 2 (4%) 3 (8%) 48 (62%)a,b Write in front of others 0 (0)% 0 (0)% 21 (27%)a,b Eat in public 0 (0%) 1 (3%) 9 (12%) Public bathroom 0 (0%) 2 (6%) 17 (22%)a Change clothes with others present 1 (2%) 6 (17%) 26 (34%)a Separation anxiety Harm to attachment figures 3 (6%) 9 (25%) 53 (69%)a,b Harm befalling self 2 (4%) 3 (8%) 45 (58%)a,b Separation anxiety Distress from separation 1 (2%) 6 (17%) 52 (68%)a,b Be alone 3 (6%) 6 (17%) 47 (61%)a,b Go to school 1 (2%) 3 (8%) 33 (43%)a,b Physical symptoms when separated 0 (0%) 1 (3%) 39 (51%)a,b Sleep alone 8 (17%) 9 (25%) 40 (52%)a Sleep away from home 0 (0%) 6 (17%) 32 (42%)a Nightmares about separation 2 (4%) 0 (0%) 21 (27%)a,b Clings to parent 3 (6%) 3 (8%) 40 (52%)a,b Generalized anxiety Worry about everyday problems 6 (13%) 9 (25%) 49 (64%)a,b Restlessness 0 (0%) 4 (11%) 50 (65%)a,b Easily fatigued 1 (2%) 2 (6%) 19 (25%)a Difficulty concentrating 0 (0%) 5 (14%) 53 (69%)a,b Irritability 3 (6%) 4 (11%) 47 (61%)a,b Generalized anxiety Muscle or nonspecific tension 1 (2%) 1 (3%) 24 (31%)a,b Sleep disturbance 10 (21%) 11 (31%) 47 (61%)a,b Dread 0 (0%) 1 (3%) 34 (44%)a,b Specific phobia Animal 7 (15%) 1 (3%) 19 (25%) Natural environment 6 (13%) 6 (17%) 26 (34%) Blood/injection/injury 0 (0%) 0 (0%) 20 (26%)a,b Situational 2 (4%) 4 (11%) 20 (26%)a Physical symptoms Blushing 1 (2%) 0 (0%) 26 (34%)a,b Feels paralyzed 0 (0%) 0 (0%) 20 (26%)a Trembling 0 (0%) 3 (8%) 24 (31%)a Dizzy 0 (0%) 1 (3%) 15 (20%)a Palpitations 5 (10%) 5 (14%) 39 (51%)a,b Difficulty breathing 0 (0%) 1 (3%) 26 (34%)a,b Physical symptoms Chills/hot flashes 0 (0%) 0 (0%) 23 (30%)a,b Sweating 2 (4%) 0 (0%) 28 (36%)a,b Nausea/abdominal distress 0 (0%) 3 (8%) 54 (70%)a,b Urge to go to bathroom 1 (2%) 0 (0%) 32 (42%)a,b Chest pain 0 (0%) 0 (0%) 11 (14%) Paresthesias 0 (0%) 0 (0%) 4 (5%) Problems eating 0 (0%) 0 (0%) 14 (18%)a Other anxiety symptoms Crying spells 0 (0%) 7 (19%) 50 (65%)a,b,c Temper tantrums 0 (0%) 0 (0%) 34 (44%)a,b Need to flee 0 (0%) 0 (0%) 35 (46%)a,b Keeps distance from others 2 (4%) 0 (0%) 37 (48%)a,b Fear of losing control 0 (0%) 0 (0%) 22 (29%)a,b Derealization 0 (0%) 0 (0%) 11 (14%) The frequency of the individual items ranged from 0 to 21% for the Healthy youth, 0–31% for the At-risk youth, and 5–70% for the anxious sample. Chi-square tests with Bonferroni adjustment (p ≤ .001) were conducted to test for group differences in item frequency among the 50 anxiety symptoms. Between-group comparisons revealed that anxious youth were more likely to endorse 43 out of 50 items compared to the Healthy sample and 34 out of 50 symptoms compared to those in the At-risk group. The most commonly endorsed anxiety symptoms for the Healthy subsample were: sleep disturbance, sleeping alone, and animal phobias. The most commonly endorsed anxiety symptoms for the At-risk subsample were: sleep disturbance, sleeping alone, worry about everyday problems, and harm to attachment figures. The most commonly endorsed symptoms among the anxious sample were: abdominal distress, harm to attachment figure, and difficulty concentrating. We also examined age differences first using the entire sample (N = 161) and then using the nonanxious sample (N = 84) on all 50 symptoms. Using a Bonferroni correction (p < .001) no significant differences in the frequency of endorsed items were found between youth at each age group for either sample. Table 4 shows the means, standard deviations of the 7 severity items and the 5-item and 7-item total scores by group. Multivariate analyses of variance with Bonferroni correction (p < .001) followed by univariate analyses demonstrated that means for the nonanxious group across all PARS severity items were significantly lower than scores for the anxious group. Comparison of study groups on PARS severity scores and total score PARS item Healthy At-Risk Anxious F M (SD) M (SD) M (SD) Number of symptoms 1.40 (1.08) 2.31 (1.37) 4.73 (0.67)a,b,c 170.71 Symptom frequency 0.77 (0.70) 1.50 (1.23) 3.71 (1.06)a,b 127.25 Severity-distress 0.94 (0.85) 1.42 (0.73) 3.84 (0.62)a,b 284.89 Severity-physical symptoms 0.36 (0.64) 0.56 (0.61) 2.75 (1.25)a,b 107.89 Avoidance 0.51 (0.69) 1.03 (1.03) 3.70 (1.00)a,b 209.59 Interference-home 0.51 (0.69) 0.89 (0.82) 3.48 (0.88)a,b 215.50 Interference-other 0.51 (0.72) 0.53 (0.70) 3.25 (1.13)a,b 143.52 Total (5-item) 3.23 (3.10) 5.36 (3.28) 17.97 (3.00)a,b 389.40 Total (7-item) 5.00 (4.39) 8.22 (4.62) 25.45 (3.99)a,b 394.11 The Cronbach α coefficient for the 5-item and 7-item PARS total scores for the Healthy and At-risk samples were .90 and .91 and .75 and .81 respectively. To assess convergent validity, Pearson correlations were calculated between the total PARS scores and other measures of anxiety (i.e., SCARED-C and SCARED-P see Table 5). For the At-risk participants, all correlations were positive and statistically significant. However, for the Healthy youth, none of the correlations were statistically significant. Divergent validity was assessed by

correlating PARS total scores with the CDI; these correlations were positive but not statistically significant for either the Healthy or At-risk participants. Convergent and divergent validity of the PARS for healthy and at-risk youth Scale Source Healthy sample (N = 48) At-risk sample (N = 36) 5-item total 7-item total 5-item total 7-item total r r r r Convergent validity SCARED-C Child 0.17 0.19 .42* .39* SCARED-P Parent 0.28 0.26 .47** .53** Divergent Validity CDI Child 0.25 0.26 .14 .11 The receiver operating curve (ROC) method (Pintea and Moldovan 2009) was used to determine the optimal cut-off point of the PARS total score in discriminating between anxious and nonanxious children. For this analysis, we included PARS data for our non-anxious sample (n = 84) as well as the anxious sample on whom the original PARS data is published (RUPP 2001; n = 77 using only children ages 7–12). An optimal cut-off point has a high sensitivity and a high specificity so as to maximize the accuracy by which children are classified. Sensitivity—the true positive rate—in this case refers to the percentage of children meeting diagnostic criteria for an anxiety disorder who are correctly identified by the PARS as anxious by scoring above the identified cut-point. Specificity—the true negative rate—refers to the percentage of children not meeting diagnostic criteria for an anxiety disorder who were correctly identified by the PARS as nonanxious by scoring below the identified cut-point. Plotting sensitivities and specificities at particular cut scores provides a curve, the area under which ranges from .50 (a scale useless for prediction; no apparent difference between the two groups of test scores) to 1.00 (a scale with perfect prediction power; perfect separation of test scores of the two groups). Based on our total nonanxious sample, a cutoff score of 11.5 on the 5-item total score maximized the sensitivity (100%) and specificity (98.8%) of the PARS for discriminating between the anxious and nonanxious groups (AUC = 1.00, p < 0.001). A cutoff of 17.5 on the 7-item total score resulted in optimal sensitivity (100%) and specificity (97.7%) (AUC = 1.00, p < 0.001). The purpose of the present study was to examine the utility of a clinician-rated instrument, the PARS, for assessing anxiety symptoms among nonclinically anxious youth (i.e., those who do not meet diagnostic criteria for an anxiety disorder). Along with descriptive data, we examined internal consistency, convergent and divergent validity, and optimum cut off scores by comparing this sample with published data on clinically anxious youth from the RUPP anxiety trial (2001, 2002). As expected, comparisons of the PARS total and severity scores were significantly lower in youth without versus with anxiety disorders. Among the individual anxiety symptoms, 43 of the 50 were endorsed more frequently by the clinically anxious youth compared to nonanxious healthy youth (and 34 of the 50 for the At-risk sample), suggesting that the majority of items should likely be retained in future revisions of the PARS. Of note, among the 13 physical symptoms on the PARS, only 1 was endorsed by more than 10% of the total nonanxious sample (i.e., palpitations). Physical symptoms are considered a hallmark feature of anxiety disorders (Ginsburg et al. 2006) and appear to be an important set of symptoms that differentiate clinically anxious and nonanxious youth. Because the sample was comprised of youth between ages 7 and 12, we also examined whether there were differences in anxiety symptoms on the PARS across the age groups, however, none emerged. While interpretation of this finding is premature given the small sample size for each age group, it may be that the symptoms assessed by the PARS across this restricted age group are more similar than different. Future studies, employing larger samples are needed to clarify age differences, as other studies have reported that anxiety and fears do vary by age (Kashani and Orvaschel 1990). With respect to reliability, Cronbach's alpha coefficients were high for the Healthy sample (.90 and .91 for the 5 and 7-item respectively), as well as the At-risk sample (.75 and .81 for the 5 and 7-item respectively), and both were better than that reported in the original RUPP sample (.64). The difference in alphas may be due to the differences in samples (e.g., samples were recruited at different time points; the anxious sample was more heterogeneous with regard to ethnicity/race) or reflect a greater variation in anxiety symptoms in clinically anxious youth which may have lowered levels of internal consistency. Regardless, youth without anxiety disorders report more consistent patterns of anxiety symptoms on the PARS. Correlations between the PARS total scores and measures of anxiety and depression provided initial support of the measure's convergent validity with a nonanxious sample, though only among the At-risk nonanxious group. Specifically, based on parent-reports, correlations between the PARS and SCARED were positive. Similarly, based on child-reports, PARS scores were positively and significantly correlated with the SCARED. The absence of a statistically significant correlation between the PARS and the SCARED for the Healthy participants was contrary to expectations but likely due to the small sample size and restricted range on both measures. With respect to divergent validity, the correlation between scores on the PARS and the CDI was not statistically significant for either subsample of nonanxious youth. Several explanations exist for these positive but non-statistically significant correlations between the PARS and the CDI. First, the PARS and CDI measure different constructs and the item overlap is lower than that found on child-self report measures of anxiety and depression which have yielded higher correlations (see Myers and Winters 2002 for review). In addition, the PARS and CDI rely on different informants which reduce shared method variance and thus reduce the magnitude of correlations. The current study used a nonclinical rather than clinical sample; higher rates of comorbidity are more likely to be found in clinical compared to community samples. Finally, the correlation was in the expected direction (in light of previous research indicating a correlation between depression and anxiety), however, the study may have had limited statistical power due to the small sample sizes to result in a statistically significant correlation. Indeed, in the original publication of the PARS, the correlation between the PARS and a parent-report measure of depression was .18 with a sample size of 128 and was statistically significant (RUPP 2002). Lastly, results from ROC analyses, indicated that optimal cut off scores of 11.5 (5-item total) or 17.5 (7-item total) maximized the specificity and sensitivity of the PARS total score for successfully discriminating youth with and without anxiety disorders. The findings of this study are preliminary and should be interpreted in the context of several limitations. First, the sample size of nonanxious youth was small and comprised of those with and without anxious parents; consequently, this sample is unlikely to be representative of a random population of community youth and does not represent "normative" data. Moreover, the sample was comprised of volunteers and thus may not be representative of non-volunteers. The small sample size also restricted the ability to examine age, race/ethnic, and gender differences or to present data on the PARS by these groupings. Future studies are needed with a much larger sample to identify the clinical cut off scores by these subgroups. Additional research is also needed to demonstrate the psychometric properties of the PARS (e.g., test–retest reliability, discriminant validity) among youth with non-anxiety psychiatric disorders and with youth from racially/ethnically diverse backgrounds to enhance the generalizability of findings. Findings from this study fill a gap in the literature by providing data on a clinician administered instrument, the PARS, among a nonanxious sample. Findings suggest that anxiety symptoms assessed via the PARS are useful, correspond with other methods of assessment (child and parent) and can provide important data for clinicians and clinical researchers working with youth in this age range. Findings also help estimate whether a child's anxiety severity at pre or post treatment is more similar to those with or without anxiety disorders. 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Birmaher B, Brent DA, Chiappetta L, Bridge J, Monga S, & Baugher M (1999). Psychometric properties of the screen for child anxiety related emotional disorders (SCARED): A replication study. Journal of the American Academy of Child and Adolescent Psychiatry, 38(10), 1230–1236. [DOI] [PubMed] [Google Scholar] Birmaher B, Khetarpal S, Brent D, Cully M, Balach L, Kaufman J, et al. (1997). The screen for child anxiety related emotional disorders (SCARED): Scale construction and psychometric characteristics. Journal of the American Academy of Child and Adolescent Psychiatry, 36(4), 545–553. [DOI] [PubMed] [Google Scholar] Clark DB, & Donovan JE (1994). Reliability and validity of the Hamilton anxiety rating scale in an adolescent sample. Journal of the American Academy of Child and Adolescent Psychiatry, 33(3), 354–360. [DOI] [PubMed] [Google Scholar] Comer JS, & Kendall PC (2004). A symptom-level examination of parent–child agreement in the diagnosis of anxious youths. Journal of the American Academy of Child and Adolescent Psychiatry, 43(7), 878–886. [DOI] [PubMed] [Google Scholar] Engel NA, Rodrigue JR, & Geffken GR (1994). Parent–child agreement on ratings of anxiety in children. Psychological Reports, 75(3), 1251–1260. [DOI] [PubMed] [Google Scholar] Ginsburg GS (2009). The child anxiety prevention study (CAPS): Intervention model and primary outcomes. Journal of Consulting and Clinical Psychology, 77(3), 580–587. [DOI] [PMC free article] [PubMed] [Google Scholar] Ginsburg GS, & Riddle M (2005). Pediatric anxiety rating scale: Revisions and normative data. Groton: Grant from Pfizer Pharmaceuticals. [Google Scholar] Ginsburg GS, Riddle M, & Davies M (2006). Somatic symptoms in children and adolescents with anxiety disorders. Journal of the American Academy of Child and Adolescent Psychiatry, 45(10), 1179–1187. [DOI] [PubMed] [Google Scholar] Hamilton M (1959). The assessment of anxiety states by rating. British Journal of Medical Psychology, 32, 50–55. [DOI] [PubMed] [Google Scholar] Jacobson NS, & Truax P (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. Journal of Consulting and Clinical Psychology, 59(1), 12–19. [DOI] [PubMed] [Google Scholar] Kashani JH, & Orvaschel H (1990). A community sample of anxiety in children and adolescents. The American Journal of Psychiatry, 147(3), 313–318. [DOI] [PubMed] [Google Scholar] Kendall PC, Flannery-Schroeder E, Panichelli-Mindel S, Southam-Gerow M, Henin A, & Warman M (1997). Therapy for youths with anxiety disorders: A second randomized clinical trial. Journal of Consulting and Clinical Psychology, 65(3), 366–380. [DOI] [PubMed] [Google Scholar] Klein RG (1991). Parent–child agreement in clinical assessment of anxiety and other psychopathology: A review. Journal of Anxiety Disorders, 5(2), 187–198. [Google Scholar] Kovacs M (1992). Children's depression inventory (CDI) manual. North Tonawanda, NY: Multi-Health Systems, Inc. [Google Scholar] Leckman JF, Riddle MA, Hardin MT, Ort SI, Swartz KL, Stevenson J, et al. (1989). The Yale Global Tic Severity Scale: Initial testing of a clinician-rated scale of tic severity. Journal of the American Academy of Child and Adolescent Psychiatry, 28(4), 566–573. [DOI] [PubMed] [Google Scholar] Monga S, Birmaher B, Chiappetta BS, Brent D, Kaufman J, Bridge J, et al. (2000). Screen for child anxiety-related emotional disorders (SCARED): Convergent and divergent validity. Depression and Anxiety, 12(2), 85–91. [DOI] [PubMed] [Google Scholar] Muris P, Merckelbach H, Mayer B, van Brakel A, Thissen S, Moulaert V, et al. (1998). The screen for child anxiety related emotional disorders (SCARED) and traditional childhood anxiety measures. Journal of Behavior Therapy and Experimental Psychiatry, 29(4), 327–339. [DOI] [PubMed] [Google Scholar] Myers K, & Winters NC (2002). Ten-year review of rating scales. II: Scales for internalizing disorders. Journal of the American Academy of Child and Adolescent Psychiatry, 41(6), 634–659. [DOI] [PubMed] [Google Scholar] Pintea S, & Moldovan R (2009). The receiver-operating characteristic (ROC) analysis: Fundamentals and applications in clinical psychology. Journal of Cognitive and Behavioral Psychotherapies, 9(1), 49–66. [Google Scholar] Poznanski EO, & Mokros HB (1996). Children's depression rating scale (CDRS-R). Austin, TX: Pro-Ed. [Google Scholar] Rapee RM, Schniering CA, & Hudson JL (2009). Anxiety disorders during childhood and adolescence: Origins and treatment. Annual Review of Clinical Psychology, 5(1), 311–341. [DOI] [PubMed] [Google Scholar] Research Units of Pediatric Psychopharmacology Anxiety Study Group. (2001). Fluvoxamine for the treatment of anxiety disorders in children and adolescents. New England Journal of Medicine, 344(17), 1279–1285. [DOI] [PubMed] [Google Scholar] Research Units on Pediatric Psychopharmacology Anxiety Study Group. (2002). The pediatric anxiety rating scale (PARS): Development and psychometric properties. Journal of the American Academy of Child and Adolescent Psychiatry, 41(9), 1061–1069. [DOI] [PubMed] [Google Scholar] Scahill L, Riddle MA, McSwiggin-Hardin M, Ort SI, King RA, Goodman WK, et al. (1997). Children's Yale-Brown obsessive compulsive scale: Reliability and validity. Journal of the American Academy of Child and Adolescent Psychiatry, 36(6), 844–852. [DOI] [PubMed] [Google Scholar] Silverman W, & Albano A (1996). The anxiety disorders interview schedule for children–IV (Child and parent versions). San Antonio, TX: Psychological Corporation. [Google Scholar] Silverman WK, Saavedra LM, & Pina AA (2001). Test-retest reliability of anxiety symptoms and diagnoses with anxiety disorders interview schedule for DSM-IV: Child and parent versions. Journal of the American Academy of Child and Adolescent Psychiatry, 40(8), 937–944. [DOI] [PubMed] [Google Scholar] Walkup JT, Albano AM, Piacentini J, Birmaher B, Compton SN, Sherrill JT, et al. (2008). Cognitive behavioral therapy, sertraline, or a combination in childhood anxiety. New England Journal of Medicine, 359(26), 2753–2766. [DOI] [PMC free article] [PubMed] [Google Scholar]

Measuring anxiety as a treatment endpoint in youth with autism spectrum disorder. Lecavalier L, Wood JJ, Halladay AK, Jones NE, Aman MG, Cook EH, Handen BL, King BH, Pearson DA, Hallett V, Sullivan KA, Grondhuis S, Bishop SL, Horrigan JP, Dawson G, Scahill L. Lecavalier L, et al. J Autism Dev Disord. 2014 May;44(5):1128-43. doi: 10.1007/s10803-013-1974-9. J Autism Dev Disord. 2014. PMID: 24158679 Free PMC article. Review.