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Research Article

Parent-Child Agreement Using the Spence Children’s Anxiety Scale and a Thermometer in Children with Autism Spectrum Disorder

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Children with Autism Spectrum Disorder (ASD) experience high anxiety which often prompts clinical referral and requires intervention. This study aimed to compare parent and child reports on the Spence Children’s Anxiety Scale (SCAS) and a child-reported “worry thermometer” in 88 children aged 8–13 years, 44 with ASD and 44 age, gender, and perceptual IQ matched typically developing children. There were no gender differences in child report on the SCAS and worry thermometers. Results indicated generally good correlations between parent and child self-reported SCAS symptoms for typically developing children but poor agreement in parent-child ASD dyads. The worry thermometer child-report did not reflect child or parent reports on the SCAS. Findings suggest 8–13-year-old children with ASD may have difficulties accurately reporting their anxiety levels. The clinical implications were discussed.

1. Introduction

Children with Autism Spectrum Disorder (ASD) consistently show high levels of anxiety. Around 40% of children and adolescents with ASD have clinically elevated anxiety levels or experience at least one anxiety disorder [1–4]. A recent meta-analysis of anxiety in ASD found that specific phobia was the most common subtype (30%), followed by Obsessive Compulsive Disorder (OCD; 17%), social anxiety disorder and agoraphobia (17%), generalized anxiety disorder (15%), separation anxiety disorder (9%), and panic disorder (2%) [3]. Anxiety related issues may prompt clinical referral and also require clinical intervention in this population. As children with ASD may quickly escalate their emotional states during “meltdowns,” assessing anxiety symptoms in a timely and valid manner is important for management at home, at school, and in clinical setting [5, 6]. A rapid assessment measure of anxiety in ASD would be useful in these contexts. This would allow parents, teachers, and clinicians to easily determine the level of anxiety in a child with ASD and, if elevated, employ an appropriate intervention. However, whether self-reported anxiety symptoms in children with ASD are valid is somewhat unclear.

A number of researchers have questioned the ability of children with ASD to self-report internal emotional states [7–10]. In empirical studies of ASD, there are mixed findings. Many have used the parent and child version of the Spence Children’s Anxiety Scale (SCAS) in children with ASD. Russell and Sofronoff [11] investigated 10–13-year-old children with Asperger’s Disorder compared to a clinically anxious normed group and found that parents of children with ASD rated their children as having higher levels of overall anxiety, obsessive compulsive symptoms, and specific phobias than parents of clinically anxious children. Children
with ASD rated themselves as having similar levels of anxiety to clinically anxious children. Parents rated their children as having higher levels of separation anxiety, social phobia, and generalized anxiety than did their child, with child ratings significantly higher than parent ratings for obsessive compulsive symptoms. Magiati and colleagues [12] examined a nonreferred sample of children with ASD aged over 8 years (mean age 12.2 ± 10.9 m) and found moderately good parent-child agreement for only three subscales (Physical Injuries, Generalised Anxiety Disorder, and separation anxiety). Farrugia and Hudson [13] found generally good parent-child correlations (r = .697) in 12–16-year-olds with Asperger’s Disorder. Oszivadjan et al. [14] also found good parent-child agreement on the total SCAS score in 10–16-year-old males with ASD. Potentially, the older child age may account for the better consistency between parent-child reports compared with younger children examined by Russell and Sofronoff and Magiati et al.

Other measures of anxiety have also been used to examine parent-child agreement on anxiety symptoms. Lopata and colleagues [15] found parents reported higher levels of anxiety than their 7–13-year-old children with ASD using the Behavior Assessment System for Children Second Edition. However, children with ASD self-reported similar levels of anxiety to comparison children. Parent and child anxiety symptoms showed poor correlations in the ASD group. White and colleagues [16] used the Multidimensional Anxiety Scale for Children, child and parent version in 12–17-year-olds with ASD. They also found child and parent reports were not significantly correlated. The validity of self-report measures in adolescents with ASD was questioned given only 23% self-reported clinically elevated anxiety scores despite all being diagnosed with an anxiety disorder. They noted that adolescents with ASD may underreport their anxiety, perhaps due to a lack of insight, because they have a different perspective about their own anxiety, or an unwillingness to truthfully report their difficulties. Using the Screen for Child Anxiety Related Emotional Disorders [17] in 8–14-year-olds with ASD, Blakeley-Smith et al. [18] found moderate interclass correlations between parent-child reports with parents reporting higher levels of anxiety than their children, except for separation anxiety; van Steensel and colleagues [19] compared child and parent reports also using the SCARED in 7–17-year-old children with ASD and an anxiety disordered group. Parent-child agreement on this instrument was poorer in the ASD group than in the anxiety disordered group.

Overall, there are equivocal findings, with some studies showing parents generally report higher levels of anxiety in their child with ASD compared with the child’s own report [11, 15, 19], whereas other studies have found relatively good parent-child agreement [12–14, 16, 18]. These discrepancies may relate to different methodologies employed given various ages, diagnoses, gender proportions, measurement instruments, and child IQ levels used across studies. For example, a meta-analytic review of anxiety in ASD found age was associated positively with levels of Generalised Anxiety Disorder and negatively with Obsessive Compulsive Disorder (OCD) and separation anxiety [3]. The meta-analysis also found a complex relationship between type of ASD (Asperger’s Disorder, PDD-NOS, or Autistic Disorder) and type of anxiety, including higher rates of Generalised Anxiety Disorder in Asperger’s Disorder, higher OCD, and specific phobia in Autistic Disorder and lower rates of OCD in PDD-NOS.

The studies reviewed so far have examined parent-child agreement using multiple item questionnaires (such as the SCAS). Given the cognitive and verbal deficits in this population, high levels of alexithymia, and difficulties answering open ended questions, more simple ways of assessing internal states are indicated [20]. Visual cues such as Visual Analogue Scales, for example, “emotional thermometers,” can be used to measure the strength of feelings [20]. Thermometer scales are frequently used in mood and anxiety interventions for individuals with ASD [21–23] and have the advantage of being a largely visual tool which is important in ASD where language delays and deviance are commonplace with relative strengths in visual skills.

Thermometer scales have long been used and validated in paediatric pain management to assess the level of pain [24–26] and emotional distress in hospital [27, 28] and nonhospital settings [29–31]. Generally, visual analogue pain scales show reasonably sound psychometrics [32]; however, there are some mixed findings. Some studies have shown poor agreement between parent and child ratings, with parents reporting generally lower levels of pain than their child [33]. Research suggests that children generally need to have normal IQ and be 7 years of age and older to use thermometer scales reliably [34].

The validity of these types of visual scales is largely unexamined in ASD. Lopata and colleagues [35] used a thermometer scale to examine stress in children aged 6–13 years with ASD. They found mild to moderate correlations between a stress thermometer scale and cortisol levels which was unexpected given the fact that child self-reports often do not correlate well with physiological measures [35, 36]. This indicated that children with ASD may have some capacity to rate their internal states accurately using a thermometer scale. No studies examining the validity of anxiety specific thermometers for ASD were found in the literature.

It is also noteworthy that studies in this area of ASD have generally failed to examine gender differences in parent-child agreement on anxiety symptoms. There are more boys than girls diagnosed with ASD, yet how gender interacts with anxiety in ASD is not well explored. Girls from adolescence onwards are reported to experience higher levels of anxiety than boys [37], which may also be the case in ASD [38]. Younger girls with ASD may also show higher levels of social anxiety relative to boys with ASD, with this difference also reflected in typically developing children [39]. It is possible that girls and boys may also self-report different levels of anxiety, with this yet to be explored by gender in ASD.

The major aim of this study was to determine how well child and parent reports on the SCAS correlated in children with ASD. Secondly, the study aimed to determine if a “worry thermometer” correlated with the SCAS. We also sought to examine whether there were any gender differences in child reports on the SCAS and the “worry thermometer.” We investigated the following research questions. (1) How well do