



Parent-Led Cognitive Behavioural Therapy for Children with Autism Spectrum Conditions. A Pilot Study

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Abstract

This article reports on a pilot study of a parent-only cognitive behavioural therapy (CBT) programme for parents of children with autism spectrum disorders (ASD) and anxiety difficulties. Twenty-one parents of anxious children with ASD (5–11 of age) completed the *From Timid to Tiger* intervention. Parent outcome measures were assessed at post-intervention and at 3-month follow-up. Analysis indicated significant reductions in both parent and clinician reports of child anxiety symptoms. Specifically, 38% of children were free of their primary diagnosis at treatment end and this increased to 57% when measured at 3-month follow-up. Positive gains were evidenced regarding parents' ability to manage their child's anxiety without accommodating to it. The results provide preliminary evidence of parent-only CBT programs for children with ASD

Keywords Autism spectrum disorders · Anxiety disorders · Parent training · Cognitive behavioural therapy · Parent-only interventions

Autism spectrum disorder (ASD) is an umbrella term that refers to a range of neurodevelopmental difficulties characterised by deficits in the areas of social communication, as well as repetitive and restricted patterns in behaviours, interests and activities (APA, 2013). Once thought a relatively rare condition, international epidemiological studies have indicated a marked increase in the prevalence of ASD over the past four decades. Current estimates suggest that ASD affects between 1 and 3% of the population (Baird et al., 2006; Kim et al., 2011). More recent studies indicate a prevalence rate of 13.4 per 1000 amongst 4-year-olds (Christensen et al., 2016).

Among young children and adolescents with ASD, mood and affective disorders are reported to occur at a greater rate compared to typically developing populations. Rates of co-morbid mental health difficulties amongst children with ASD vary greatly with rates between 40 and 70% depending on age, sampling methods, and other developmental factors

(NICE, 2014; van Steensel et al., 2011). Children presenting with ASD display significantly more externalizing and internalizing difficulties (Kanne & Mazurek, 2011; van Steensel et al., 2011). Research has emphasized the unique interaction between anxiety and core ASD traits that may lead to the manifestation of anxiety in different ways from those with more typical development. Anxiety amongst children with ASD has been associated with more significant externalizing difficulties, aggression, and social avoidance (Lecavalier et al., 2014). Research indicates that nearly half of children with ASD experience qualitatively varied fears and worries, such as fears of change, novelty, or unusual specific phobias that are associated with significant impairment (Mayes et al., 2013), as well as other more traditional symptoms of anxiety such as social phobia. Children with ASD may also be predisposed towards anxiety owing to increased or decreased sensory stimuli, as well as difficulties in the areas of executive functioning and social communication (Kerns & Kendall, 2012; Woods et al., 2013). Given the high levels of need amongst this population, as well as increased stress and burnout amongst family members (Byrne et al., 2018; Ludlow et al., 2012) there is a strong need for effective treatments for comorbid mental health difficulties amongst children with ASD.

There is a substantial evidence base for the effectiveness of cognitive behavioural therapy (CBT) in treating mood

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and affective disorders in neurotypical children (James et al., 2015). Arising from this, a number of studies have applied CBT for children with ASD with specific modifications. CBT utilizes both behavioural and cognitive strategies such as cognitive restructuring, psychoeducation, and problem solving in helping the individual face and manage feared situations or events. The last decade has seen an increase in the number of studies using CBT for children and adolescents with ASD presenting with a range of externalizing and internalizing disorders. Given this increased interest, a number of meta-analyses and systematic reviews have been completed. Kreslins et al. (2015) reported on ten randomized studies that used CBT as the primary treatment modality. Large effect sizes were found on parent and clinician measures ($d = 1.00\text{--}1.05$) compared to medium effect sizes reported on self-report measures ($d = 0.65$). Other systematic reviews (Kester & Lucyshyn, 2018; Vasa et al., 2020) have further emphasised the effectiveness of CBT as a model of treatment for young children struggling with anxiety who have ASD.

Although clear evidence exists regarding CBT's use for children, questions still remain regarding the differing models of treatment delivery. There are a number of types of treatment modalities in use, with the most prevalent being individual child therapy (Storch et al., 2013), as well as a combination of individual and group treatment for parents and children (e.g. Multimodal Anxiety and Social Skills Intervention, MASSI; White et al., 2013) and standardised group treatment for parents and children (e.g. Facing Your Fears Programme; Reaven et al., 2012). There has been little research to date that has focused on the respective advantages and disadvantages of these differing modalities. There is mixed evidence regarding the need for parental involvement in reducing childhood anxiety. James et al.'s (2015) meta-analysis found no clear evidence indicating that any one treatment modality was more effective. Similarly, McKinnon and colleagues (2018) reported that CBT treatment delivery format (individual, group, parent-led) did not statistically impact on a range of childhood anxiety difficulties bar specific phobia in which individual CBT was found to be the more effective format. A more recent review of parental involvement in CBT for adolescent anxiety disorder, indicated that although parental involvement was beneficial, it was not possible to draw firmer conclusions as to whether the type of parental involvement actually enhanced outcomes (Cardy et al., 2020). Other findings indicate that parental involvement in child anxiety therapy is minimal and does not actively add to treatment effectiveness (Thulin et al., 2014).

An alternative approach to child-focused interventions that has garnered a growing evidence base is the delivery of CBT-based material to parents. This approach is based on etiological models that emphasise the reciprocal role that parents may have in the maintenance of child anxiety by modelling maladaptive strategies, such as avoidance and

cognitive biases (Hudson & Rapee, 2004). This may be a useful strategy given that having a parent with an anxiety disorder raises the risk two-fold for the child developing an anxiety disorder although there is a lack of evidence for the role of parental negativity in the development of child anxiety (Lawrence et al., 2019). The increased importance of the role of parents in the implementation of treatment for children with ASD has been specified in the NICE guidelines. Amongst the many modifications found in CBT-specific treatments for children with ASD is the importance of the parent in helping the child use and adapt strategies to reduce anxiety (Walters et al., 2016). Parent-led approaches also provide a range of potential benefits including reducing the burden of children attending clinic. A parent-led treatment modality may be particularly suitable for families of young children with ASD. Young children with anxiety may be reluctant participants in therapy (Creswell et al., 2019). In addition, children with ASD present with varying levels of speech difficulties and their ability to engage in talk therapy may be reduced. Parent-led approaches may also be effective in targeting other difficulties such as child behavioural difficulties (Kasperzack et al., 2020) as well as empowering parents' ability to help generalise treatment strategies, and helping address parental behaviours that may act as maintaining factors (Creswell et al., 2019).

Family accommodation (FA) is an interpersonal feature of paediatric anxiety. It relates to the actions that parents engage in or avoid in order to ameliorate a child's distress related to a feared situation or event (Norman et al., 2015). FA of paediatric anxiety disorders can include active participation by parents in symptom-driven behaviours. These include modification to family routines or schedules (Lebowitz et al., 2013), excessive reassurance seeking and allowing the child to avoid situations. High levels of FA have been found to predict poor treatment responses in children presenting with obsessive compulsive disorder (OCD) and other anxiety disorders (Kagan et al., 2016). High rates of FA amongst parents in relation to children's restricted and repetitive behaviours (RRB) have also been reported (Feldman et al., 2019). Findings specific to autism suggest that many parents of children accommodate to difficulties associated with restricted and repetitive behaviours and this follows a comparable rate and pattern similar to that reported by parents managing other anxiety disorders (Feldman et al., 2019). FA is increasingly seen as a treatment consideration for children with ASD. Storch et al. (2015) reported a reduction in FA and anxiety symptoms amongst a subsample of youth with ASD who completed a course of individual CBT intervention.

Limited research has focused on parent-only group CBT informed interventions. Studies to date have primarily focused on parents of neurotypical children. Cartwright-Hatton et al. (2011) reported that 57% of children under

the age 9 were free of their primary diagnosis after completing the *From Timid to Tiger* program compared to 15% in the control condition. Similar positive findings were reported by Thirlwall et al. (2013) which found that a fully guided parent CBT program led to 50% of children being free from their primary anxiety diagnosis compared to 39% being diagnosis free in a shorter brief guided CBT group. These and other findings (Cobham et al., 2017; Salari et al., 2018) have indicated the clinical utility of parent-led CBT groups in addressing child anxiety. To date, there has been limited research into parent-led approaches for children diagnosed with ASD struggling with anxiety disorders, with much of the research to date focusing on interventions combining both parent and child components (Driscoll et al., 2020; Reaven et al., 2015). The findings regarding parent-led approaches have been somewhat mixed. Cook et al. (2019) reported on a parent-led approach for young children with high functioning ASD and anxiety. At post-treatment no treatment effects were found on child or parent measures but at 3-month follow-up, children demonstrated a reduction on internalizing measures. A further feasibility and acceptability study (Rodgers et al., 2017) comprising of 11 parents reported on the effectiveness of an intervention group in reducing Intolerance of Uncertainty (IU). Findings indicated that parents reported significant reductions in terms of parent reported child anxiety and parent self-report IU and general mental health, with effect sizes in the moderate to large range. The mixed findings to date suggest that further work is required in optimising parental engagement in parent-only programs and child outcomes (Creswell et al., 2020).

In summary, although a number of reviews have indicated the use of CBT in alleviating anxiety amongst children with ASD, there has been very limited research focusing on the potential of parent-led CBT for pre-adolescent children. Parent-led approaches offer a number of possible advantages in addressing anxiety. Such approaches may also be effective in helping reduce FA.

Hypothesis

The current study aims to explore the effectiveness of the *From Timid to Tiger* group parenting program on internalizing behaviours, as well as FA in children with ASD. To the authors' knowledge this is one of only a very small number of studies that have specifically focused on parent-led CBT interventions for children with ASD and anxiety difficulties. It was hypothesized that children whose parents received the intervention would demonstrate significant reductions in measures of anxiety and FA. It was

also hypothesised that these gains would be maintained at 3-month follow-up.

Method

The current study employed a repeated group measure design. The study comprised of three assessment times; pre-intervention, post-intervention, 3-month follow-up (see Fig. 1). All families completed the initial assessment. Inclusion criteria were as follows (a) parent of a child with ASD diagnosed through either the Autism Diagnostic Interview-Revised (Rutter et al., 2003) or the Autism Diagnostic Observation Scale (Lord et al., 1999), (b) child met criteria for at least one anxiety disorder on the Anxiety Disorders Interview Schedule-Parent form (ADIS-P, Silverman & Albano, 1996), (c) children aged between 5 and 11, and (d) parent had sufficient English to take part in the intervention.

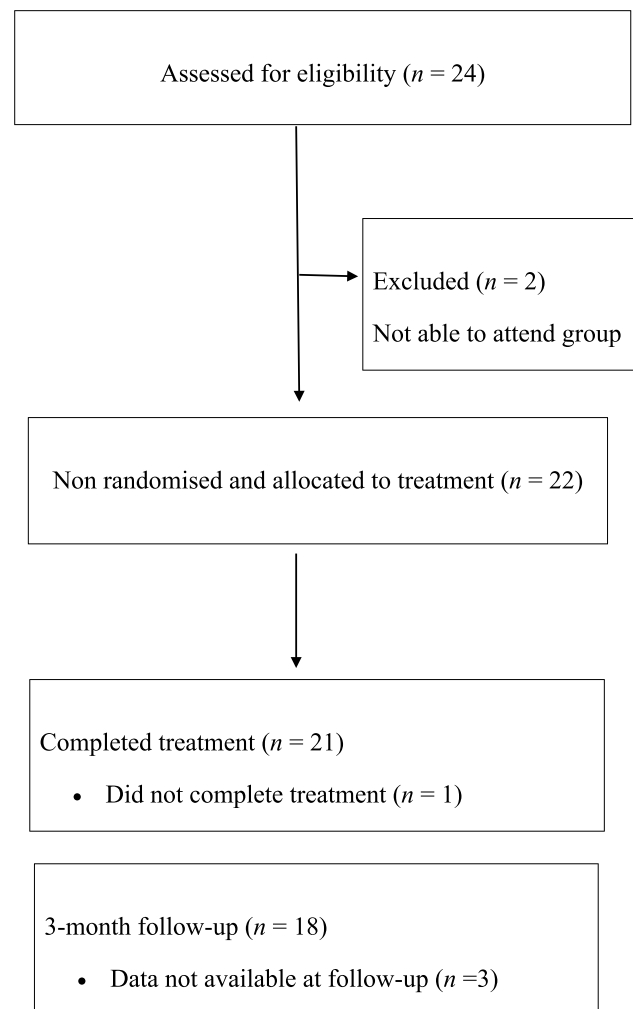


Fig. 1 Flow chart of client participation

Inclusion criteria were purposefully broad and children presenting with comorbid, intellectual, motor or attentional difficulties were also included.

Participants

Participants were availing of services from the Irish public health service in South Dublin, Republic of Ireland. Participants were parents recruited through the local Early Intervention and School Aged Teams. Both of these services are multi-disciplinary teams that comprise of various professionals providing services for children with complex needs. Members of the respective teams contacted parents of children with ASD or who were undergoing ASD assessment who were known to struggle with anxiety to enquire about their willingness to participate in the group. After a short telephone screen, parents were invited to attend for an intake appointment and to complete the questionnaire battery. Participants were parents of children aged between 5 and 11 (at time of recruitment) who had received a diagnosis of autism or were in the process of undergoing assessment at time of recruitment. Children's full-scale IQ ranged from the superior to the extremely low range on cognitive assessments. The assessments included the Wechsler Preschool and Primary Scale of Intelligence Fourth Edition (WPPSI-IV, Wechsler, 2012) and the Wechsler Intelligence Scale for Children-Fifth Edition (WISC-V, Wechsler, 2014). The majority of children's functioning was in the low average to average range of ability. Of the 21 children enrolled, 17 (81%) were male and four female (19%). Regarding ethnicity, seventeen of the children were Irish (81%), two were Asian, one was Eastern European and one endorsed other.

Assessment and treatment were conducted by senior clinical psychologists and an assistant psychologist who were all trained in CBT and are experienced in working with both children and families. All procedures were in accordance with the high ethical standards within the service. Parents were recruited from referrals to child disability teams in the local area. Team members contacted potential parents as to enquire about their interest in attending the group. Parents were then invited to attend for screening interview. At this time parents completed consent forms if willing to participate. The ADIS-P was used as the primary diagnostic tool to assess the extent and severity of anxiety difficulties. All parents endorsed symptoms of at least one anxiety disorder on the ADIS-P. Three groups were run from August 2018 to February 2020. Before beginning the first session of group, parents were given an opportunity to complete the remaining test battery. Of the twenty-four parents that completed the ADIS-P pre-treatment, twenty-one parents attended one of three groups that were held. Two parents were not in a position to attend any of the sessions due to other commitments. One parent attended only 2 sessions. This parent had only

completed a pre-SCARED at intake and it was decided not to include this in the analysis. Data was available for twenty-one parents at post treatment. Data for eighteen parents was obtained at 3-month follow-up. Two parents did not return calls and one parent had accessed another treatment following completion of the program and it was deemed that completion of Time 3 data was not appropriate. Table 1 outlines participant characteristics.

Intervention

The *From Timid to Tiger* program (Cartwright-Hatton et al., 2010) is a parent-led CBT intervention for parents of anxious children. Each manualized session lasted two hours. Sessions provided parents with knowledge about child anxiety and appropriate behavioural management strategies in dealing with behavioural difficulties arising from both externalizing and internalizing difficulties. The first hour of group involved feedback and review of homework. The second hour introduced new material based on

Table 1 Characteristics of sample

Children	21
Sex	17 male (81%) 4 female (19%)
Average age of child (<i>SD</i>)	8.6 (2.01)
Age Range	5–11
IQ level	
Superior (120–129)	1 (4.7%)
Average (90–109)	9 (42.8%)
Low average (80–89)	6 (28.5%)
Borderline (70–79)	3 (14.2%)
Extremely low (<70)	1 (4.7%)
Not available	1 (4.7%)
Participating parents	
Mothers	19 (90.4%)
Fathers	2 (9.6%)
Highest parent education	
Leaving certificate	2 (9.5%)
Diploma	8 (38.1%)
University degree	11 (52.3%)
Clinical characteristics	
Primary diagnosis of anxiety disorder	
Separation anxiety	2 (9.5%)
Social anxiety	5 (23.8%)
Specific phobia	9 (42.8%)
Panic disorder	1 (4.7%)
Generalized anxiety disorder	4 (19%)
Comorbid anxiety disorders	20 (95.2%)
Average number of diagnoses (<i>SD</i>)	4.6 (1.99)
Oppositional defiant disorder	9 (42.8%)

CBT anxiety management principles. Exposure plays a key role in the treatment. Parents are encouraged to complete fear hierarchies in session with the therapist and to then implement these at home. A special emphasis, after session 4, is also placed on helping parents devise and implement exposure work using fear hierarchies during check-in. Cartwright-Hatton et al. (2011) report two overarching goals of the treatment; the first to help parents provide a calm, predictable environment in which child behavioural difficulties are managed and to help promote brave, confident behaviour. Secondly, the group aimed to provide parents with a range of strategies (graded exposure, problem-solving, and behavioural experiments) to manage childhood anxiety (see Cartwright-Hatton et al., 2011, for a full overview of the program's components). Although parents were free to talk about difficulties in line with their child's diagnosis, no specific autism components were covered on the program. Facilitators were aware of autism relevant issues that may have contributed to anxiety issues (e.g. sensory issues, intolerance of uncertainty, alexithymia). Although not autism specific, the program placed a greater emphasis on behavioural as opposed to cognitive strategies and parents had a number of opportunities to devise and implement behavioural experiments, in line with effective modifications to CBT for ASD (Walters et al., 2016). In the current study, the 10-session program was collapsed into 8-sessions. All treatment components were adhered to but certain behavioural components (consequences and time out) were streamlined into one session. Given the extra time needed by parents to implement exposure strategies, two individual telephone contacts (approximately 15 min in length) were conducted after session five with the group reconvening for session six after the two telephone consultations. Other than this, no other adaptations were made to the group. The three groups were facilitated by three senior clinical psychologists with each having over 10 years' experience of working with children and families, as well as an assistant psychologist. The main author was a clinical psychologist, trained in CBT for anxious children. Treatment fidelity and integrity was adhered to via the use of the manualised program checklist. Adherence checklists were completed at the end of each session by facilitators. Six sessions were randomly assessed for adherence and 99% of expected material was covered indicating excellent fidelity to the model.

Assessment Protocol

Psychometric measures in the assessment protocol evaluated child anxiety problems, behavioural difficulties, and family accommodation. Measures were selected for their brevity; use in previous evaluations of parent-led programs, and their strong psychometric properties.

Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV)

The ADIS-IV (Silverman & Albano, 1996) is a diagnostic interview for children and their parents, respectively. It assesses the presence of anxiety disorders, depressive disorders, and other externalizing disorders that occur in youth that correspond to the criteria set by DSM-IV (American Psychiatric Association, 1994). The clinical severity of the disorder is rated on a clinical severity rating scale (CSR) from 0 to 8, with scores ≥ 4 considered to be diagnostically significant. In the current study, only parents completed the interview at pre, post, and 3-month follow-up. The ADIS-IV has shown to be a reliable and valid instrument for assessing mental disorders (Lyneham et al., 2007; Wood et al., 2002). Inter-rater reliabilities of diagnoses at pre-intervention were conducted on 16% of interviews. Excellent reliability was found among the two assessors (ICC 0.98).

Screen for Child Anxiety Related Disorders (SCARED)—Parent Version

The SCARED is a 41-item parent-rated scale asking respondents to indicate how often a descriptive phrase captures their child's anxiety over the past 3-months. The scale comprises of five subscales and gives a total score, rated on a 3-point scale range from 0 (Not true or hardly ever true) to 2 (Very true or often true). The items included on the questionnaire are reflective of the DSM-IV criteria for anxiety disorders in childhood such as panic disorder, separation anxiety disorder, social phobia, general anxiety disorder, and symptoms related to school phobias. The SCARED demonstrates good psychometric properties (Birmaher et al., 1997, 1999) and has been found to be a valid tool in the assessment of anxiety of children with ASD (Stern et al., 2014). In the current sample, the SCARED produced internal consistency of $\alpha = 0.95$.

The Brief Assessment Checklist for Children (BAC-C),

The BAC-C (Tarren-Sweeney, 2013) is a 20-item caregiver-report psychiatric rating scales designed to screen for and monitor clinically-meaningful mental health difficulties experienced by children and adolescent. The tool has been shown to be a reliable measure of general child difficulties and compare favourably with that of existing screening instruments. In the present study, Cronbach's α for the BAC-C was 0.81.

Strengths and Difficulties Questionnaire-Emotional subscale

Child anxiety symptoms were assessed using the Strengths and Difficulties Questionnaire (SDQ)—Parent Report. For

this study the emotional subscale score was calculated by summing the five questions received on a Likert scale. A higher score indicated more child emotional difficulties. The SDQ is a widely used measure and a number of studies attest to its robust psychometric properties (Goodman, 1997; Goodman & Scott, 1999). Cronbach's α of 0.75 was reported for the emotional subscale.

Family Accommodation Scale

The Family Accommodation Scale (FAS) is a parent questionnaire that measures the frequency of family accommodation to child symptoms and the modification of family schedules due to child anxiety. Family accommodation is associated with more severe psychopathology and poorer clinical outcomes (Lebowitz et al., 2015). The items are scaled 0 to 4. The scale has good internal consistency, convergent, and divergent validity (Lebowitz et al., 2013). The scale is increasingly being used with families of children with ASD (Storch et al., 2015). In the present study, pre-FAS Cronbach's α was very high at 0.91.

The Clinical Global Impressions scale

The Clinical Global Impressions scale (CGI, Guy, 1976) was used to assess improvement (CGI-I) across anxiety symptoms. A CGI-I score of 1 (very much improved) or 2 (much improved) at treatment end and 3-month follow-up indicated clinical response. Improvement scores were rated based on change from baseline, post-treatment, and follow-up on review questionnaire battery. Two of the clinicians (GB, ANG) completed the CGI independently and scores were then discussed so as to improve consistency in rating improvements.

Statistical Analysis

Data were analysed using SPSS 19 (IBM, USA). Missing data were handled using the last-observation-carried-forward (LOCF) method. There are limitations to the LOCF method due to its underlying assumption that patients who receive interventions do not improve. However, the LOCF method is a conservative approach to handling missing data. The primary endpoint was the ADIS-P (measured by CSR and number of diagnoses). Other outcomes included the SCARED, SDQ emotional subscale, BAC-C, and FAS.

A series of repeated measure analyses of variances were completed (ANOVAs) to examine differences in parent and clinician rated measures of anxiety and related difficulties across the three different times. Bonferroni adjustments were applied to avoid possibility of alpha error inflation. Effect sizes for within-group change from pre- to post are listed in Table 2. Effect sizes for comparison between the

treatment groups were performed and reported using partial eta squared.

Results

Descriptive Statistics

The sample consisted of 17 boys and 4 girls. Their mean age was 8.6 (SD 2.01, range 5–11 years). The most common primary diagnosis was specific phobia (9, 42.8%) followed by social anxiety (5, 23.8%), generalized anxiety disorder (4, 19%), separation anxiety (2, 9.5%) and panic disorder (1, 4.7%). Twenty children (95.2%) had at least one other co-morbid anxiety disorder and nine (42.8%) children met diagnostic criteria for oppositional defiant disorder. The mean number of diagnoses was 4.6 (SD 1.98, range 1–8). The mean number of sessions attended was excellent at 7.2 (SD 1.22). See Table 1 for characteristics of sample.

ADIS-IV Anxiety Disorder Diagnoses and Clinical Severity Rating (CSR)

The ANOVA for the number of ADIS diagnoses revealed a significant univariate effect, $F(2, 19) = 29.6$, $p < 0.001$, $\eta^2 = 0.757$. Post hoc analysis revealed significant differences from pre to post. Further small reductions were found between post and follow-up but these did not reach significance. Diagnostically, at post treatment, 38% ($n = 8$) of the children were free from their primary diagnosis and this increased to 57% ($n = 12$) at 3-month follow-up according to the ADIS-P. Fourteen percent of children were free from all diagnoses at Time 2 and this was maintained at 3-month follow-up.

A one-way repeated ANOVA was conducted to compare scores on the CSR primary anxiety diagnosis across the three times. There was a significant effect for time, $F(2, 19) = 12.7$, $p < 0.001$, $\eta^2 = 0.573$. Post hoc analysis revealed a significant reduction in CSR total scores for primary anxiety diagnosis ($p = 0.001$) at post and from post to 3-month follow-up ($p = 0.023$) suggesting continued improvement even after the program was completed.

SCARED

Repeated measures ANOVA revealed significant reductions across time for the SCARED total scale, $F(2, 19) = 3.74$, $p < 0.043$, $\eta^2 = 0.283$. Post hoc assessment found significant reduction in pre scores to post scores ($p = 0.05$) and pre to follow-up ($p = 0.036$).

Table 2 Parent ratings, means, and standard deviations for outcome measures, p values, and effect sizes (η^2) of repeated measures ANOVA (N=21)

	Timid to tiger group			ANOVA		
	Time 1	Time 2	Time 3	F	p	η^2
<i>ADIS</i>						
CSR						
M	7.2	4.9	4.1			
SD	1.14	2.4	2.9	12.7	0.000**	0.573
Number of ADIS diagnoses						
M	4.66	2.3	2.14	29.6	<0.001**	0.757
SD	1.98	1.53	1.55			
<i>SCARED</i>						
M	32.2	26.5	25.8	3.74	0.043	0.283
SD	17.4	14.2	13.6			
<i>BAC-C</i>						
M	13.7	13.8	11.1	3.96	0.036	0.295
SD	7	8.09	5.35			
<i>SDQ-E</i>						
M	4.61	3.90	3.71	2.46	0.112	0.206
SD	2.85	2.73	2.41			
<i>FAS</i>						
M	17.38	13.90	11.76	4.54	0.024	0.324
SD	10.13	8.26	6.22			

ADIS anxiety disorder interview schedule, *CSR* clinical severity rating, *SCARED* screen for child anxiety related disorders, *BAC-C* brief assessment checklist for children, *SDQ-E* strengths and difficulties questionnaire- emotional subscale, *FAS* family accommodation scale

** $p < 0.01$; significance for t-tests adjusted (Bonferroni)

BAC-C and SDQ Emotional Subscale

The ANOVA for the total score of BAC-C revealed a significant univariate effect $F(2, 19) = 3.96$, $p = 0.036$, $\eta^2 = 0.295$. However, pairwise comparison revealed no significant effect at post-treatment or at follow-up. On the SDQ emotional subscale, no significant univariate effect was found for time and no statistically significant differences were found among pre, post, or 3-month follow-up scores.

Family Accommodation Scale

The ANOVA for the total score for the FAS revealed a significant univariate effect $F(2, 19) = 4.54$, $p = 0.024$, $\eta^2 = 0.324$. Pairwise comparisons showed no significant difference at post-treatment, but a significant difference at 3-month follow-up ($p < 0.017$).

CGI-I

At post-treatment, on the CGI-I, 57% of children emerged with either a much improved or very much improved rating and this increased to 71% at 3-month follow-up. No clients demonstrated deterioration at either post or follow-up but

two (9.5%) scored in the no change rating at both post and follow-up.

Discussion

The primary purpose of this pilot study was to assess the effectiveness of the *From Timid to Tiger* programme, a parent-led group, for children presenting with ASD and anxiety. The results from the current study provide tentative evidence that this programme may be effective in reducing childhood anxiety. Specifically, at post-treatment, 38% of children were free of their primary diagnosis and that this increased to 57% when measured at 3-month follow-up. Significant reductions were also found in relation to the clinical severity and number of anxiety and related diagnoses as measured by the ADIS-P. Similarly, reductions were also found in parent reported measures of child anxiety as well as FA. These treatment gains were also found to be maintained at 3-month follow-up. Finally, 57% of children were reported to have had a positive clinical response to the treatment, rising to 71% at 3-month follow-up.

Given the complexities of anxiety expression in children with ASD, the vast majority of treatment modalities used

with this population include both parent and child components (Kreslins et al., 2015). This is one of the first studies that focused specifically on a parent-led treatment modality for children presenting with a high level of clinical complexity as evidenced by the number of diagnoses met pre-treatment. The study also demonstrates that parent led-CBT programs may be a useful and effective modality for the treatment of anxiety in children with ASD and are broadly in line with findings from research focusing on parent only approaches for anxiety disorders among neurotypical children (McKinnon et al., 2018). The observed effects are also commensurate to the results reported in recent meta-analysis and systematic reviews (Kester & Lucyshyn, 2018; Ung et al., 2015).

Two of the three anxiety measures (ADIS-P, SCARED) demonstrated clinically significant reductions with large effect sizes noted. It should be noted that pre-ADIS-P scores were very elevated and the other measures did not reflect this severity. However, the inter-rater reliability between the two assessors suggests that the findings are accurate. In addition, although reductions on the SCARED were clinically significant at 3-month follow-up, scores were just above the clinical threshold suggesting that levels of anxiety were still elevated. The emotional subscale of the SDQ did not reach clinical significance. The SDQ is commonly used as a screening measure among neurotypical children and has accrued very good evidence regarding its psychometric properties for this population (Stone et al., 2010). However, it is possible, that the SDQ emotional subscale was not sensitive enough to detect change given that such questions tap into broad and general worry. Further study is required in assessing if the SDQ emotional subscale is an appropriate tool for measuring anxiety in children with ASD. Findings in the current study also indicated that child behavioural difficulties did not significantly decrease during the entirety of the treatment. This is somewhat surprising as there is strong evidence suggesting that behavioural training programs are effective in reducing child externalizing behaviours (Kasperzack et al., 2020; Ruane et al., 2019). The *From Timid to Tiger* programme uses a range of evidence-based behavioural management strategies that mirror those used in other treatment protocols. However, it should be noted that the majority of sessions in the current study focused on anxiety management and the behavioural management components were streamlined into two sessions. Prior research has found that short-term treatments (four-sessions) were not effective in reducing child behavioural difficulties amongst children with high functioning ASD (Suzuki et al., 2014). It is possible that an extended and more expansive focus on co-occurring child behavioural difficulties could be more beneficial for parents. Further research may benefit from expanding and using specific treatment protocols in evidenced based programs focusing on child behavioural

difficulties with this population, such as Stepping Stones Triple P (Sanders et al., 2004).

Findings from this study also suggest that the programme is effective in treating a range of anxiety difficulties including social anxiety, generalised anxiety, separation anxiety, and specific phobia. Combined parent and child interventions for children with ASD have been reported to be effective in addressing the aforementioned anxiety difficulties and previous studies have included all anxiety disorders in their treatment protocols (Reaven et al., 2012). Given that this study is one of the first parent-led programmes focusing on children with ASD, other research is needed in clarifying if this treatment is more effective in treating specific anxiety types. Prior research focusing on parent-led approaches for neurotypical children suggest that the transdiagnostic focus can be effective in treating a range of anxiety difficulties (Byrne et al., 2021; Cartwright-Hatton et al., 2011). Of note, over 95% of the children in the current sample met criteria for another anxiety disorder suggesting that comorbidity is the rule rather than the exception within this complex client group and appropriate interventions need to focus on shared mechanisms underlying internalizing disorders (Ehrenreich et al., 2009). However, a robust evidence-base addressing the efficacy of disorder specific interventions for this population is lacking. In addition, the current study did not compare efficacy across different disorders so it is not possible to be certain as to whether this intervention was truly equally effective across all anxiety disorders. Further work is needed in determining what transdiagnostic models, that have shown effectiveness with a neurotypical population could be applicable for this population.

The current study also provides the first evidence that a parent-led CBT program may help reduce FA amongst children with ASD. Recent studies suggest that FA is amenable to treatment through parent-only approaches for neurotypical children (Byrne et al., 2021; Lebowitz et al., 2019). FA has been cited as a relevant treatment consideration as many children with ASD engage in repetitive and restricted behaviours that some parents manage by accommodating to them (Feldman et al., 2019). Recent research suggests that FA is linked to problematic child behaviour among children with ASD, with parents using such strategies to help reduce child emotional reactivity (O’Nions et al., 2020). It has been suggested that high levels of FA may require intensive levels of intervention (O’Nions et al., 2020). Parents in the current study reported a reduction in FA in relation to anxiety specifically, although it is possible that this change in FA could also manifest in other areas such as how they respond to ASD-related repetitive behaviours. Further research is required in delineating the specific relationship between FA as regards child anxiety and repetitive behaviours and how much overlap exists between the two. In addition, it should be noted that only two fathers participated in the

study. Monzani et al. (2020) reported that both paternal and maternal FA for paediatric OCD are significant predictors for child treatment response and that treatment needs to consider the whole family. It would be interesting to see if joint-parent participation in groups would lead to further reductions in FA and an increase in awareness of how parents may use differing facets of FA in helping to manage their child's anxiety. Research is also needed to look at how fathers and mothers may use FA for children with autism and anxiety and how the different contributions and involvement of fathers may maintain anxiety. Although preliminary, this study indicates that parent-led CBT programs may help parents reduce FA which is a potential treatment target for an increasing amount of family interventions.

Limitations

The findings from the current study are limited by a number of methodological constraints. Although a number of significant and large effects were found on outcome measures, we cannot attribute these gains to the treatment, as the sample is small and the design did not include randomization or the use of a control group. Although methodological safeguards were used (fidelity measure, manualized treatment protocol, inter-rater reliability), assessment collection was not blinded leading to the potential for bias. Furthermore, the absence of an independent evaluator in identifying the ADIS diagnoses and CGI is a limitation that tempers findings. Self-report measures are subject to common biases and this could explain some of the positive findings. Treatment fidelity was not measured by independent raters, thus caution is needed in interpreting the seemingly high adherence to the manual. In addition, although the ADIS-P has been used widely amongst parents of children with ASD, the current study roll-out predated the publication of both the Anxiety and Related Disorders Interview Schedule for DSM-5, Child Version (Albano et al., 2021) and the ADIS-Autism Addendum (Kerns et al., 2017) which would have provided a more accurate assessment of DSM-5 anxiety symptoms relevant to ASD. Although all parents provided positive feedback regarding the utility of the group, no specific treatment acceptability measure was used. Despite the aforementioned limitations, overall, the results reported signal the positive potential for dissemination and implementation of the *From Timid to Tiger* program, with minimal adaptations, for parents of children with ASD and anxiety.

Implications and Areas for Future Research

This study is one of only a small number to evaluate a parent-led CBT group anxiety intervention for children 11 years and younger presenting with a diagnosis of ASD and anxiety. In addition, the children included in the study varied in terms

of IQ from the extremely low to superior range although, 16 of the children were functioning in the low average range or above. Prior studies focusing on parent-only programs for children with ASD have reported mixed results (Cook et al., 2019; Rodgers et al., 2017). This study indicates that parents were able to use the strategies and techniques in helping reduce childhood anxiety as evidenced by the reduction on parent report measures, as well as ADIS CSR scores and number of clinical diagnoses. This study sample comprised of parents attending an Irish public health service providing intervention to children presenting with complex needs. Attrition rates for the program (21 of 24 parents who started the program completed the group) suggested that parents found it acceptable although further qualitative information would be beneficial in helping specify how parents found the program and what treatment components were particularly useful. The study also suggests that parents of children with varying levels of need, functioning, and complexity may find the treatment beneficial. This is particularly useful for younger children with ASD who may find CBT strategies and techniques difficult to understand or apply.

Further research is required to replicate the findings reported in the current study. A controlled study with an appropriate sample size is needed in ensuring that such findings are replicable. Future large-scale research may also benefit from comparing differing types of modalities when treating anxiety in children with ASD. Regarding neurotypical children, no significant differences were found among treatment modalities (McKinnon et al., 2018) however this cannot be assumed for this population given differences in neurobiological, affective, and cognitive responses to stressors (Rodgers & Ofield, 2018). Further insight into how parent-only programs may address proposed relevant and related transdiagnostic concepts such as intolerance of uncertainty would also be of benefit. In addition, this study did not include a measure of parental stress or general parental mental health. It would be interesting to ascertain if there is a recursive element to the implementation of CBT strategies for parents and if parents use some of the strategies in managing their own anxieties. Finally, COVID-19 restrictions, have led to many services having to fundamentally change the way that they offer interventions (Byrne & Ni Longphuir, 2020; Su et al., 2021). It would be interesting to see if the current programme could be utilised on a telehealth format. This would help to gauge if the effectiveness reported here translates to telehealth formats and if parents would find such approaches acceptable and feasible.

Conclusions

In summary, the current study attempted to draw tentative conclusions regarding the effectiveness of the *From Timid to Tiger* program for parents of children with ASD and anxiety.

Although conclusive findings cannot be drawn from this study, preliminary evaluation suggests that the program is helpful in reducing child anxiety and FA. These promising results warrant further investigation to see if parent-only anxiety management programs offer an alternative modality that can cater for the varying levels of functioning amongst children on the autism spectrum and related developmental difficulties. Ongoing research is required in order to clarify key components of interventions (behavioural change more so than cognitive restructuring), factors that impact on treatment response, and whether such treatment gains are maintained into the medium to long term.

Author Contributions G.B: Conceptualization, methodology, co-facilitated groups, performed computations, writing and editing. Á Ní G: Co-facilitated the groups, investigation, and editing, T M: Writing-reviewing and editing.

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