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DOI:
[10.1111/camh.12596](https://doi.org/10.1111/camh.12596)

Document Version
Publisher's PDF, also known as Version of record

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Citation for published version (APA):

Palmer, E., Woolgar, M., Carter, B., Cartwright-Hatton, S., & Challacombe, F. (in press). Preventing Anxiety in the Children of Anxious Parents: feasibility of a Brief, Online, Group Intervention for Parents of One to Three Year Olds. *Child and Adolescent Mental Health*. <https://doi.org/10.1111/camh.12596>

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Preventing anxiety in the children of anxious parents – feasibility of a brief, online, group intervention for parents of one- to three-year-olds

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Background: The evidence suggests an increased risk of developing anxiety problems in children of anxious parents. The current study explored the feasibility and acceptability of an intervention with anxious parents of young children, to inform the possibility of further trials. **Methods:** Participants were recruited through primary and secondary care psychological services and social media. Participants who had a current or recent anxiety disorder and a child aged 12–47 months were included. Assessments of parental and child outcomes occurred at baseline, after the intervention (week-2) and follow-up (week-8). The intervention was delivered in a small group format, in two sessions, one week apart, using videoconferencing. **Results:** Out of 32 participants, 30 (94%) attended the full intervention. All found the intervention acceptable and reported it as useful and relevant. There was a reduction in parental depression (MD = 2.63, 95%CI 1.01–4.26), anxiety (MD = 3.93, 95%CI 2.49–5.37) and stress (MD = 4.60, 95% CI 3.02–6.18) and increases in parenting confidence. **Conclusions:** The online group intervention was feasible and acceptable. There were moderate to large effects on parental mental health and no adverse effects on children (decline on outcome measures). This indicates that intervening early in parenting with anxious parents is possible and warrants further investigation to establish prevention efficacy with a larger, controlled trial.

Key Practitioner Messages

- Anxiety disorders aggregate across generations and parenting is a modifiable factor that can increase risk
- Early intervention for parents of 1–3 year olds could prevent the development of child anxiety
- A two-session online psychoeducation group was feasible and acceptable to parents
- Positive effects were found on parental mental health and parenting practice at 8 week follow-up
- Practitioners could utilise a brief intervention with anxious parents of young children

Keywords: Prevention; anxiety; anxiety disorders; parenting; videoconferencing; intergenerational transmission

Introduction

Anxiety and related disorders are the most common mental health difficulties in young people with a worldwide prevalence of 6.5% (95% CI 4.7–9.1%) (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015). The prevalence in adults is 3.8%–25% with higher rates in women than men (Remes, Brayne, van der Linde, & Lafortune, 2016). Approximately 50% of those affected across the lifespan report first experiencing anxiety-related symptoms during childhood (Barrett, Rapee, Dadds, & Ryan, 1996; Kessler, Ruscio, Shear, & Wittchen, 2009; Strawn, Lu, Peris, Levine, & Walkup, 2021) suggesting the chronic nature of childhood onset anxiety. However, there is lack of evidence for effective treatment for established problematic anxiety in early childhood, often defined as pre-

school and early school years of under 6 years old (Cartwright-Hatton, Roberts, Chitsabesan, Fothergill, & Harrington, 2004). A recent Cochrane review into the effectiveness of CBT for young people, whilst finding some indication of effectiveness of this treatment, did not differentiate early childhood, and a very small percentage of the research related to children below eight (James, Reardon, Soler, James, & Creswell, 2020). In this study, we consider early childhood to be aged one-, two- or three-year-old, as there is evidence of anxiety symptoms in children as young as one- to two-year-old (Carter, Briggs-Gowan, Jones, & Little, 2003).

The social and economic costs of experiencing childhood anxiety are high. Children impacted by anxiety are at higher likelihood of experiencing difficulties with education (Van Ameringen, Mancini, & Folvolden, 2003),

and social and emotional functioning (Jacob, Suveg, & Whitehead, 2014). Child anxiety can also impact parental productivity, that is time taken away from work or other daily activities (Creswell et al., 2015). Furthermore, it has been estimated that a child experiencing anxiety confers societal costs 21 times greater than a typical child (Bodden, Dirksen, & Bögels, 2008).

There is clear evidence that anxiety disorders aggregate in families; one study found that over one-third of children with a clinically anxious parent had an anxiety disorder compared with one-fifth where there is no clinically anxious parent (Merikangas, Avenevoli, Dierker, & Grillon, 1999). A recent meta-analysis identified a relative risk for children of parents with an anxiety disorder (compared with children of parents without an anxiety disorder) of 1.76 of having an anxiety disorder, and a 1.31 risk of having a depressive disorder (Lawrence, Murayama, & Creswell, 2019). The reasons for this increased risk are likely due to a combination of environmental factors alongside biological or genetic. Studies employing a 'children of twins' design have found more support for direct environmental transmission of anxiety from parent to child than for genetic (Ask et al., 2021; Eley et al., 2015). Parenting is likely to be a particularly salient environmental influence on the development of either risk or resilience to anxiety in younger children.

Some specific parenting behaviours and styles are heightened in parents with anxiety-related disorders and these may also have an influence on the transmission of anxiety. In particular, behaviours influencing infant mechanisms of social referencing or vicarious learning, such as modelling, and those that restrict a young child's experience, such as over-involvement or avoidance (Cartwright-Hatton et al., 2014; Lebowitz, Leckman, Silverman, & Feldman, 2016; Turner, Beidel, Roberson-Nay, & Tervo, 2003). The salience and constant presence of parents in the early years provides many opportunities for such learning experiences to occur. An overly protective parenting style including avoidance of novel situations and discouraging exploration may contribute (Jones, Hall, & Kiel, 2021). By the same token, modelling of approach behaviours is also related to reduced anxiety and increased approach in children (Egliston & Rapee, 2007; Kiel, Premo, & Buss, 2016) and parents' observable behaviour has been found to be more important than parental anxiety in the impact on children (Lebowitz, Shic, Campbell, MacLeod, & Silverman, 2015). Furthermore, parents with anxiety may benefit from input with general parenting skills; child anxiety in two- and three-year-olds was associated with less effective discipline strategies in anxious mothers (Robinson & Cartwright-Hatton, 2008).

As anxiety can manifest very early in childhood, providing parents with the skills and understanding to identify and address factors thought to be associated with transmission of anxiety has the potential to ameliorate or prevent the transmission of anxiety. There have been promising results in using this approach with older children; Ginsburg, Drake, Tein, Teetsel, and Riddle (2015) used a 11-session cognitive-behavioural programme for families which demonstrated an over 6 times reduced rate in families that had received the intervention at one-year follow-up. Cartwright-Hatton et al. (2018) developed a one-day group intervention for parents of older children aged 3–9, finding that rates of anxiety disorders

in children were 16.5% higher in the control group at twelve month follow-up.

Given the likelihood that perinatal parenting factors are relevant in the transmission of anxiety (Aktar et al., 2019; Bogels & Brechman-Toussaint, 2006), and that parents perceive a high level of impact of their anxiety on parenting (Challacombe et al., 2017), providing intervention for parents of very young children could potentially have a large impact as parenting skills and the tone of the dyadic environment are being established (Perlman, Lunkenheimer, Panlilio, & Pérez-Edgar, 2022).

Parents of young children have high demands on their time and interventions need to be accessible. Online group interventions using video have been found comparable with in-person formats in terms of clinical effectiveness and client acceptability (Banbury, Nancarrow, Dart, Gray, & Parkinson, 2018). The use of this medium could also provide the opportunity to include greater diversity within therapeutic groups and improve accessibility overall (Christensen & Hickie, 2010). Given these factors, the necessity to provide online interventions due to the COVID pandemic and the general lack of time for parents of young children, online delivery could be a particularly good fit for this group.

The current study aimed to explore whether a brief online early intervention for anxious parents of children aged one to three years was feasible (measured by recruitment, adherence to the intervention and follow-up) and acceptable (self-reported acceptability). The secondary aims were to estimate the effect of early intervention on parental perceptions and confidence; parental mental health and child emotional and behavioural symptoms.

Methods

This was a single centre, pre-post, feasibility study, designed in order to pilot online delivery of early intervention to a group of anxious parents with very young children. Participants completed measures before and after the intervention and at follow-up 8-weeks after baseline. Prior to the study, a focus group of parents with experiences of mental health issues when their children were very young were consulted about the overall design of the research study and the specific design of the intervention. The themes from this focus group are not reported in detail here but are referred to where relevant through the methods section. The study was approved by Dulwich NHS Research Ethics Committee (19/LO/1438). It was registered as a clinical trial (<https://clinicaltrials.gov/ct2/show/record/NCT04556331>).

Inclusion and exclusion criteria

The inclusion criteria were parents with a diagnosis of an anxiety disorder (including generalised anxiety disorder, panic disorder, health anxiety or social anxiety), obsessive-compulsive disorder or self-reported, significantly impairing experience of anxiety, currently or in the last 2 years. The inclusion of significantly impairing anxiety ensured anxiety-related criteria were not overly restrictive to those in receipt of a diagnosis. It was ascertained by a single self-report question. Initially, potential participants also completed an anxiety measure as screening (SCARED-A), though this was removed due to high consistency between the single self-report question and anxiety scores on this measure. Included parents were also required to meet the following criteria: at least one child aged between 12 and 47 months, fluent English speakers; and able to access a device with internet connection to participate in an online group.

The exclusion criteria were current co-morbid mental health issues that would impact safe participation in a group (current acute psychosis, severe depression or suicidality or current substance misuse). These were ascertained either by referring clinician or, for those who self-referred, during pre-screening to consent by researcher.

Procedure

Participants were identified via clinical referral or via social media: Clinicians in primary and secondary mental health services within a large NHS Trust in south-east London discussed the study with the potential participant and, with permission, provided details to the research co-ordinator. The second method was via the social media channels of charities and groups focused on anxiety support. In this route, interested participants contacted the research co-ordinator directly.

After providing written consent, and 7–2 days ahead of a participant's scheduled intervention, the baseline assessment measures were collected via a secure, online platform (Qualtrics). One week after baseline measures, participants attended the two-session online intervention. Outcome measures were collected again immediately post-intervention and follow-up measures were collected 8 weeks after the baseline assessment. Upon completion of final measures, participants were sent a shopping voucher to the value of £30 to thank them for their time and participation in the study. (See Figure 1 for study timeline and procedure.)

Intervention

The intervention consisted of two, two-hour sessions, run exactly 1 week apart. Each session had a 5-min break at the mid-point. There was a minimum of three and maximum of eight participants in each intervention group. Participants attended as individuals; no couples attended. To accompany

the online intervention, each participant was provided with a printed workbook. The group was facilitated by a doctoral level psychologist in clinical training.

Intervention design

The content of the intervention was adapted from a programme designed for parents of children aged 3–9 years (Cartwright-Hatton et al., 2018) with the same goal of reducing intergenerational transmission of anxiety. It is a psychoeducational intervention, which provides skills and knowledge in raising confidence in children. The aim of the adaptation was two-fold: to make the intervention appropriate for delivery online using videoconferencing software and to ensure that the content was relevant to parents with children from the younger age group of 1–3 years. Table 1 provides an overview of the intervention's content (the full intervention manual is available from the authors). The intervention was designed to be engaging, non-stigmatising and to foster self-compassion about the topic in parents.

Outcome measures

Feasibility outcomes were the following:

- Recruitment of at least 24 participants in the 3-month recruitment period due to time limitations of the first author's clinical doctorate (75% of available spaces).
- At least 70% of participants attending both sessions.
- Follow-up data from at least 70% of the participants who completed baseline.
- At least 70% of participants found the intervention acceptable and relevant according to the rating scales described below.

Acceptability measures

Acceptability of intervention measure (AIM) (Weiner et al., 2017). This consists of four items (it meets my approval, it is appealing, I like it, I welcome it) rated on a 5-point scale of complete disagreement to complete agreement, which have been shown to have good psychometric properties of construct validity and test-retest reliability. Participants were asked to complete this measure immediately after the programme. In addition to this measure, participants were also asked to indicate how applicable they felt the programme was to them and to rate their experience of specific aspects of the

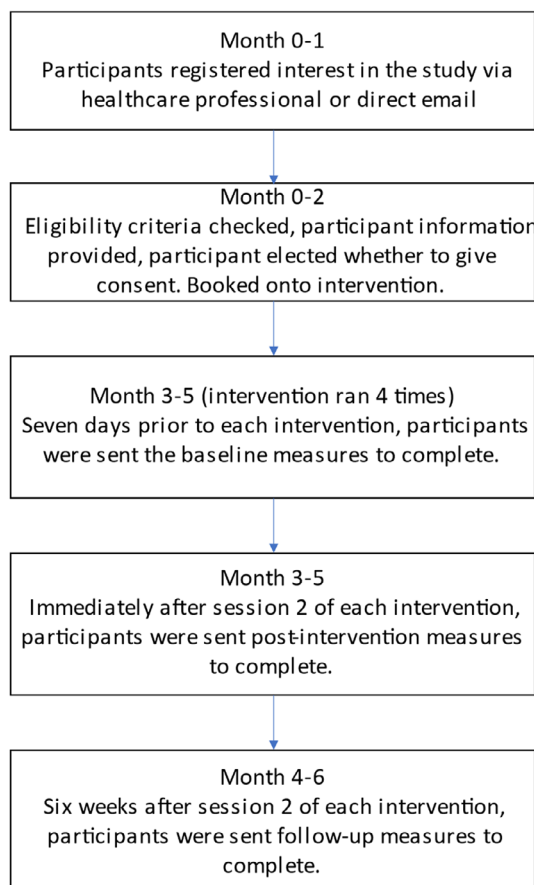


Figure 1. Study timeline and procedure

Table 1. Overview of the intervention content

Session	Topic area
One	Welcome and introductions, including ground rules Factors that contribute to developing anxiety The 'seven confident thoughts' about self, others and the world Emotion coaching (what have you already taught your child and how to coach emotions) Child-led play—what is it and how to do it Praise and limit setting Avoidance and its role in anxiety Planning home practice
Two	Reviewing last session and home practice Parenting hotspots for anxious parents—using self-compassion to identify and manage these Over-protection Modelling anxiety / confidence Compensating (enabling non-anxious experiences) Reducing perfectionism—modelling and applying being 'good enough' Setting intentions for future practice.

intervention delivery, including duration, timing, group size, online method and questionnaire completion, using Likert scales (see Appendix S1).

Participants were also asked a range of open questions about their experiences of the intervention. Prior to the intervention, they were asked what questions they would like answered by such an intervention, to review whether these were covered by the content. Immediately after the intervention, they were asked for free text comments about the specific aspects listed above (e.g. duration, online delivery), any potential barriers to attending and which aspects of the content they found useful, most relevant, missing or overlapping with other support.

Clinical measures

Child emotional and behavioural measure. *Infant and Toddler Social Emotional Assessment (BITSEA)* (Briggs-Gowan, Carter, Irwin, Wachtel, & Cicchetti, 2002). This measure consists of 42 items designed to screen for behavioural and emotional problems (e.g. 'cries or hangs on to you when you try to leave'; 'runs away in public places') and competence (e.g. 'points to show you something far away'; 'shows pleasure when they succeed') in young children. It has been shown to have excellent validity and reliability in clinical and general populations (Karabekiroglu, Briggs-Gowan, Carter, Rodopman-Arman, & Akbas, 2010) and is relatively brief and so potentially more acceptable to parents. As impact of the intervention on the child was a secondary hypothesis in this feasibility study, the sample size was unlikely to provide enough power to show any significant effects, and there was no follow-up beyond 8 weeks, a screening rather than diagnostic measure was deemed appropriate. This could provide indication of any adverse effects of the intervention that would need to further exploration. Parents were asked to complete this measure before and immediately after the intervention and at 8-week follow-up.

Parental mental health. *Depression Anxiety Stress Scales (DASS-21)* (Lovibond & Lovibond, 1995). This 21-item scale measures symptoms of depression, anxiety and stress. It has been shown to validly measure these separate dimensions (Henry & Crawford, 2005). As with the screening measure for child symptoms, this outcome was employed to provide initial indication of any short-term impact of the intervention, particularly any adverse effects on mental health. Parents were asked to complete this measure before and immediately after the intervention and at 8-week follow-up.

Parent self-perception of parenting measure. As this was a novel intervention being trialled with parents of young children, we designed a bespoke measure to gather information about parents' own perceptions of and confidence in their parenting. We asked about general confidence in parenting, confidence in setting limits and dealing with emotions and ability to have fun with child. We then asked about some specific aspects of parenting that have been indicated to be more problematic when parents experience anxiety: extent to which avoidance, over-protection, expressed anxiety and perfectionism may be present in their parenting. These eight aspects were rated using a 5-point Likert scale. Parents were asked to complete this measure before and immediately after the intervention and at 8-week follow-up.

Sample size justification

No formal sample size calculation was carried out, but consistent with a feasibility study design and logistical parameters, up to 32 participants was considered appropriate.

Data analysis

Assumptions of normality were tested by visual inspection of distribution. Student-*t* tests were used to compare changes in scores between baseline and the two follow-up timepoints. The mean difference was presented alongside the 95% confidence interval and *p*-value. SPSS Version 27 software was used for the analysis.

Results

Participants were consented between 30 September and 23 November 2020, with 47/58 (81%) of those expressing interest in the study eventually proving eligible, willing to take part and available at the allotted times. Of the 32 participants consented and booked onto an intervention, 30 attended both sessions of the intervention and completed measures at all three time-points (see Figure 2); two did not start the intervention or complete measures. Of the participants, 95% were female ($n = 28$) and had a mean age of 35.9 years ($SD 4.98$, range 26–52 years). Parents identified their ethnicity as white British or Irish (87%), mixed white and Asian (7%), Indian (3%) and Asian British (3%). Parents' current working status at the time of the intervention was full-time employed or self-employed (37%), part-time employed or self-employed (43%), unpaid carer or parent (10%) and in education or training (3%), with the remaining 7% declining to answer. Parents had a range of primary anxiety disorder presentations: generalised anxiety disorder (43%), health anxiety (10%), obsessive compulsive disorder (17%), social anxiety disorder (13%), panic disorder (3%) and the remaining 13% self-reported significantly impairing anxiety with no formal diagnoses (Table 2).

Baseline clinical data

Data are reported for the 30 parents who completed the measures and intervention. Our sample reported higher levels of depression, anxiety and stress compared with

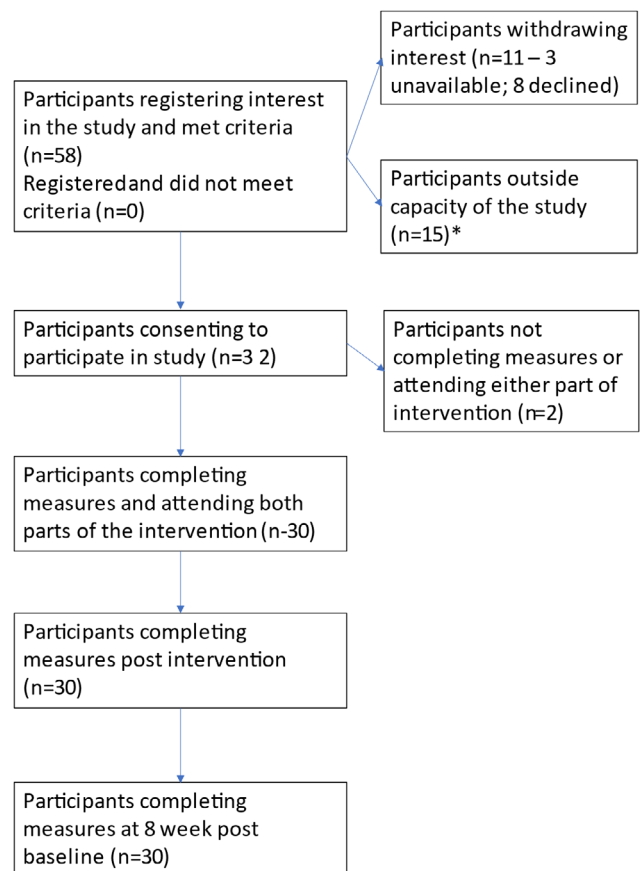


Figure 2. Consort diagram. *No further contact with research team

Table 2. Characteristics of the 30 participants and index child

Participant gender— <i>n</i> (%) female	28 (95%)
Mean (<i>SD</i>) age	35.9 (4.98) range 26–52
Ethnicity <i>n</i> (%)	
White British/Irish	87
Mixed White/Asian	7
Indian	3
Asian British	3
Employment <i>n</i> (%)	
Fulltime	11 (37)
Parttime	13 (43)
Unpaid carer or parent	3 (10)
In education Training	1 (3)
Declined to answer	2 (7)
Primary disorder <i>n</i> (%)	
Generalised anxiety disorder	13 (43)
Health anxiety	3 (10)
Obsessive–compulsive disorder	5 (17)
Social anxiety disorder	4 (13)
Panic disorder	1 (3)
Significant anxiety no formal diagnosis	4 (13)
Number of children	
One	21 (69)
Two	8 (28)
Three	1 (3)
Index child mean (<i>SD</i>) age in months	28.9 (9.51)
Range	15–47 months

normative population ranges (Table 3). In an additional self-report question, 19 parents (63%) felt they experienced significantly impairing anxiety currently and 11 (37%) felt they experienced it within the last 2 years, but not currently.

Child social and emotional problems and competence as measured by the BITSEA had a mean score for the problem scale of 10.67 (*SD* = 6.19) and competence scale of 17.00 (*SD* = 2.80) (Table 4). In a normative sample (Briggs-Gowan et al., 2002), means are reported by

Table 3. Baseline parental scores and categories for depression, anxiety and stress

Sub-scale	<i>N</i> (%) by response	<i>M</i> (<i>SD</i>) ^a sample range	<i>M</i> (<i>SD</i>) in normative sample ^b
Depression	Normal 8 (27)	6.80 (3.26) 0–14	2.83 (3.87) 0–21
	Mild 10 (33)		
	Moderate 6 (20)		
	Severe 5 (17)		
Anxiety	Extremely Severe 1 (3)	7.53 (3.88) 1–19	1.88 (2.95) 0–20
	Normal 5 (17)		
	Mild 4 (13)		
	Moderate 3 (10)		
	Severe 12 (40)		
Stress	Extremely Severe 6 (20)	10.57 (3.83) 4–16	4.73 (4.20) 0–21
	Normal 9 (30)		
	Mild 2 (7)		
	Moderate 9 (30)		
	Severe 10 (33)		
	Extremely Severe 0 (0)		

^aPossible range of scores for each sub-scale is 0–21.

^bNormative data as reported in Henry and Crawford (2005).

Table 4. Baseline child functioning (BITSEA) scores and normative sample comparisons

Sub-scale	<i>M</i> (<i>SD</i>) ^a Sample range	Range of <i>M</i> (<i>SD</i>) in normative sample over all age brackets ^b
Problem	10.67 (6.19)	9.4 (5.6)–11.1 (6.4)
Competence	17.00 (2.80)	15.2 (2.9)–18.4 (2.4)

^aPossible range of scores for problem is 0–46 and competence is 0–22.

^bNormative data as reported in Briggs-Gowan et al. (2002).

age and sex category, so here we will consider the range of means reported from this sample as a comparator. The normative mean problem score ranged 9.4 to 11.1 and the normative mean competence score ranged 15.2 to 18.4. As part of the BITSEA, there is an additional item in which parents are asked whether they are worried about their child's emotions, behaviour or relationships. At baseline, 12 (40%) reported that they were 'not at all worried', 15 (50%) 'a little worried' and 3 (10%) 'worried'.

Feasibility objectives

All spaces that were available for the intervention were filled, with an excess of eligible participants recruited. All participants (100%) 'agreed' or 'completely agreed' that: (a) the programme met their approval; (b) the programme appealed; (c) they liked the programme and (d) they welcomed the programme. About 97% participants 'completely agreed' or 'agreed' that the programme was applicable to them, with 90% saying the content was 'entirely' relevant to the age group and 10% agreeing that it was 'partially' relevant. The duration (87%), group size (97%) and timing of the sessions (83%) were rated as 'practical' or 'completely practical' by all participants. Participants rated 'child-led play' and 'emotion coaching' as the most relevant topics at 8-week follow-up, with all aspects of the intervention apart from 'compensating' (enabling non-anxious experiences) rated as relevant by some (Figure 3).

The intervention was delivered online using videoconferencing: 15 participants (50%) rated this as 'practical' and 15 (50%) as 'completely practical'. An overview of the qualitative themes from the intervention identified some mixed feelings about the experience of the online intervention (see Table 5), with a small number of participants feeling it was more difficult to engage in this format than a traditional face to face group. However, a greater number of participants commented that there were clear advantages to this approach, in particular that it facilitated attendance and, in some cases, felt safer. The participants generally reported that the intervention seemed well suited to being online.

Parental mental health

Parental depression reduced from baseline to end of intervention by a mean of 2.73 points (95% CI 0.139–4.08, $p < .001$), effect size 0.76 (Cohen's d) and then remained relatively stable—change between baseline and Week 8 follow-up was a mean of 2.63 points (95% CI 1.01–4.26, $p = .02$). The effect size from baseline to 8-week follow-up was 0.61 (Cohen's d , 95% CI 0.21–0.99), considered a medium effect (Cohen, 1988).

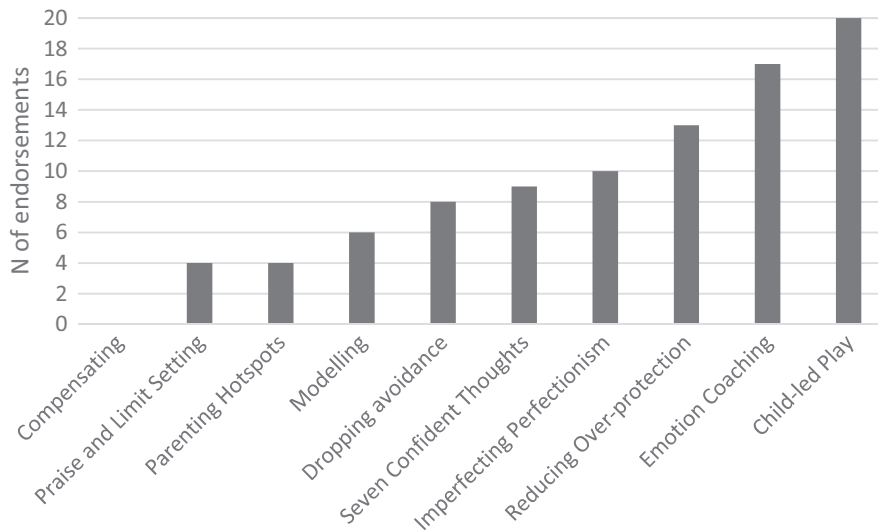


Figure 3. Intervention topics rated as most relevant by participants at 8-week follow-up. Participants could select up to three topics

Table 5. Thematic analysis of participant comments about online delivery of intervention

Online delivery method (instead of in person)	N participants mentioned
Group and facilitator alliances	
Harder to bond with others in group and facilitator	2
Desire for face to face instead (non-specific)	2
People might feel more relaxed as connections are less intense	1
Impacted (negatively) the amount I contributed	2
Felt in my own safe space	1
Content and structure	
Type of content and structure felt suited to online	4
Delivery was clear and easily understood over the online delivery	3
Number of people in the group felt well suited to online	2
Valued access to peer support from being in a group	2
Ambivalence about use of chat function—useful and distracting	2
Logistics and technical	
Internet connection was problematic at times	4
Logistically easier to attend (childcare, travel, work commitments)	7

Parental anxiety reduced by a mean of 2.33 points (95% CI 0.79–3.88, $p = .04$) from baseline to end of intervention, effect size 0.56 (Cohen’s d) reducing further to 3.93 (95% CI 2.49–5.37, $p < .0001$) from baseline to 8-week follow-up. The effect size to Week 8 follow-up was 1.02 (Cohen’s d , 95% CI 0.57–1.46), considered a large effect.

Parental stress followed a similar pattern, reducing by a mean of 3.07 points (95% CI 1.40–4.74, $p < .001$) from baseline to end of intervention, effect size 0.69 and by

4.60 (95% CI 3.02–6.18, $p < .001$) to 8-week follow-up. The effect size to 8-week follow-up was 1.09 (Cohen’s d , 95% CI 0.63–1.52), also a large effect. (See Figure 4.)

Child social and emotional problems and competence

Scores at baseline and follow-up on the problem subscale of the BITSEA were not significantly different (mean change 1.37, $p = .176$), nor were those on the competence scale (mean change -0.6 , $p = .155$), shown in Figure 5. In response to the single-item question about level of parental worry about their child’s emotional and social development, the proportion of parents reporting feeling ‘not at all worried’ about their child was 40% ($n = 12$) before the intervention, 46.7% ($n = 14$) immediately after and increased further to 63.3% ($n = 19$) at 8-week follow-up.

Parental confidence and perceptions of own parenting

Overall confidence about parenting scores significantly increased across time-points. Between baseline- and end of-intervention, there was a mean change of 0.67, (95% CI 0.32–1.01, $p < .001$), giving an effect size of 0.92 (Cohen’s d), and this was sustained at 8-week follow-up (mean change from baseline 0.53, 95% CI 0.24–0.82, $p < .001$), an effect size of 0.78 (Cohen’s d). Parental confidence in dealing with their child’s emotions increased from baseline to 8-week follow-up (mean change from 0.63, 95% CI 0.24–1.03, $p = .003$), an effect size of 1.07 (Cohen’s d) and the ability to have fun and play with the child from baseline to end of the intervention (mean change 0.53, 95% CI 0.16–2.90, $p = .007$), an effect size of 1.01 (Cohen’s d), see Figure S1. Finally, parental perfectionism reduced from baseline to end of intervention (mean change 0.53, 95% CI 0.12–0.95), effect size 1.11 and baseline to 8-week follow-up (mean change 0.73, 95% CI 0.29–1.19, $p = .002$), effect size 1.20, see Figure S2. All effect sizes for parental perceptions were therefore large, apart from overall confidence which was medium.

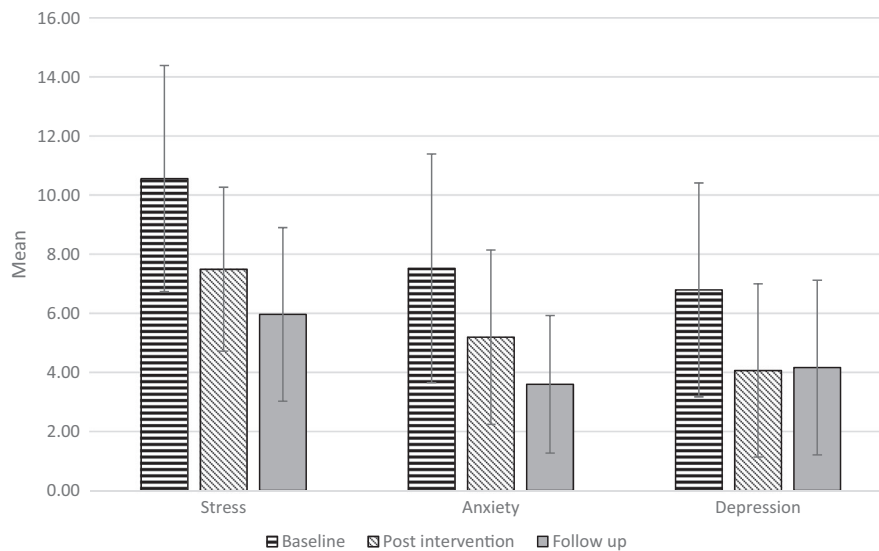


Figure 4. Mean (with standard deviations) parental depression, anxiety and stress (DASS) scores at each timepoint

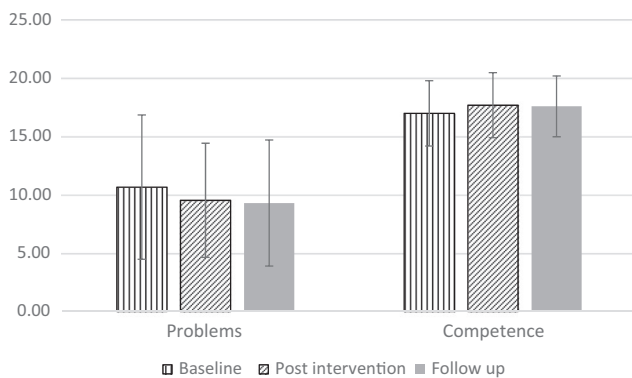


Figure 5. Mean (with standard deviations) child functioning (BITSEA) scores at each timepoint

Discussion

To the best of our knowledge, the current study was the first to deliver an intervention intended to reduce transmission of anxiety to a group online using videoconferencing and to anxious parents of children of this young age. We demonstrated that this was feasible and acceptable to participants. All feasibility parameters were exceeded, indicating that the intervention could be evaluated in a larger trial (Bowen et al., 2009). We reported improvements in all parental clinical outcomes (anxiety, depression and stress) at 8-weeks post baseline. The effect sizes indicated a large effect for improvement in all three of these outcomes between baseline- and post-intervention assessments. For anxiety and stress, there were even lower scores at the 8-week follow-up, indicating large effect sizes for change from baseline to this point. Parental confidence and reported scores on ‘fun with the child’ also increased after the intervention, with this change sustained at 8-week follow-up. Parental mental health may have benefitted directly from engaging in the intervention, with continued benefits as they put the skills into practice in real life.

A similar (face-to-face) programme, trialled before with parents of slightly older children, also received high

acceptability ratings (Cartwright-Hatton et al., 2018). In the current study with parents of younger children, ‘applicability’ of the content was rated as high and relevance to this specific age group endorsed. This suggests that the type of intervention trialled here is adaptable to this age and stage and could have the potential for even greater preventative effects as it is undertaken earlier in parenting and childhood. The content focused on targeting early manifestations of anxiogenic parenting such as avoidance, modelling and over-protection (Jones et al., 2021) but also contained elements to foster child confidence and autonomy such as child-led play and developing skills in limit setting (Robinson & Cartwright-Hatton, 2008).

Our results indicated an impact of the intervention on parenting behaviours and parental mental health, both of which can impact the development of anxiety in children (Aktar & Bogels, 2017). The intervention has the potential to benefit both child and parent, altering the affective environment and dyadic interplay at an early stage as parenting style is being developed (Perlman et al., 2022; Price & Kiel, 2022).

Child BITSEA scores were relatively unchanged from baseline to 8 weeks. Given that the intention of the intervention is to change parenting practice in order that this might subsequently raise children’s confidence and minimise the risk of anxiety transmission, we would not have expected to see an effect on children over such a short follow-up period. For future studies, in addition to the assessment of child problems, measures of behaviours that could be pre-cursors to anxiety disorders in children, such as child heightened avoidance or expressed anxiety could provide earlier indications of efficacy in this young group. Importantly, we did not see any evidence of immediate or short-term *negative* impacts on child emotional or social measures, which give early indications that the intervention is safe for use with this group.

Limitations

There was limited diversity in participants’ ethnic background. This may limit the generalisability of findings to

the wider population. Similarly, whilst parental age was a reasonably wide range, there was no representation of very young parents (under 25 years). The vast majority of participants were female, meaning that the results may not be generalisable to fathers (Beato, Pereira, Barros, & Muris, 2016). Minimal demographic data, apart from age, were collected about the children so we are unable to ascertain generalisability of this aspect of the sample. Information on child behavioural inhibition and on potential social determinants of anxiety would be particularly salient in evaluating the effectiveness of the intervention in particularly at-risk groups (Burriss et al., 2022; Suarez et al., 2021). Future research may benefit from seeking ways to overcome these barriers and target recruitment in specific communities in order to further understand feasibility and acceptability across the range of backgrounds and contexts that exist within the population of the UK, and beyond. Collaboration with a range of stakeholders including those who are experts by experience would inform the effective development of recruitment and inclusion strategies in a full-scale trial. We used an idiosyncratic measure of parenting perceptions in order to capture the specific aspects targeted by the intervention, but this was not validated or tested for reliability.

The intervention was conducted by a doctoral level psychologist in training, delivered to a group of parents; we do not know, therefore, whether the delivery is transferable to a range of clinicians with different skillsets. The online group structure would potentially fit well with stepped care service models.

Conclusion

This study found that a brief intervention aimed at reducing the transmission of anxiety for parents of young children was feasible and acceptable when delivered in an online group setting. The findings demonstrated a moderate effect in indicators of clinical improvement in parental depression, anxiety and stress, and in self-reported parenting variables. This suggests that intervening early in parenting is possible and warrants further investigation to establish prevention efficacy in children with a larger, controlled trial.

Acknowledgements

This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors. E.P. designed the study, collected and analysed the data and drafted the first draft of the manuscript. F.C. designed the study, interpreted the findings and drafted the first draft of the manuscript. M.W. interpreted the findings and approved the final draft of the manuscript. B.C. wrote the first draft of the manuscript. S.C.H. developed the original intervention for older children and approved the final draft of the manuscript. F.C. is the guarantor of the study. We would like to thank all the parents that took part in the study, and Rose Tinch-Taylor who generated some of the figures. The authors have declared that they have no competing or potential conflicts of interest.

Ethical information

The study was approved by Dulwich NHS Research Ethics Committee (19/LO/1438). It was registered as a clinical trial (NCT04556331).

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Supporting information

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Participant feedback questionnaire.

Figure S1. Mean and SD for parent-reported confidence in aspects of parenting.

Figure S2. Mean and SD for parent-reported perceptions of frequency of parenting behaviour specific to anxiety transmission.

References

- Aktar, E., & Bögels, S.M. (2017). Exposure to parents' negative emotions as a developmental pathway to the family aggregation of depression and anxiety in the first year of life. *Clinical Child and Family Psychology Review*, 20(4), 369–390. <https://doi.org/10.1007/s10567-017-0240-7>
- Aktar, E., Qu, J., Lawrence, P.J., Tollenaar, M.S., Elzinga, B.M., & Bögels, S.M. (2019). Fetal and infant outcomes in the offspring of parents with perinatal mental disorders: Earliest influences [Review]. *Frontiers in Psychiatry*, 10, <https://doi.org/10.3389/fpsyt.2019.00391>
- Ask, H., Cheesman, R., Jami, E.S., Levey, D.F., Purves, K.L., & Weber, H. (2021). Genetic contributions to anxiety disorders: Where we are and where we are heading. *Psychological Medicine*, 51, 2231–2246.
- Banbury, A., Nancarrow, S., Dart, J., Gray, L., & Parkinson, L. (2018). Telehealth interventions delivering home-based support group videoconferencing: Systematic review. *Journal of Medical Internet Research*, 20, e25.
- Barrett, P.M., Rapee, R.M., Dadds, M.M., & Ryan, S.M. (1996). Family enhancement of cognitive style in anxious and aggressive children. *Journal of Abnormal Child Psychology*, 24, 187–203.
- Beato, A., Pereira, A.I., Barros, L., & Muris, P. (2016). The relationship between different parenting typologies in fathers and mothers and children's anxiety. *Journal of Child and Family Studies*, 25, 1691–1701.
- Bodden, D.H., Dirksen, C.D., & Bögels, S.M. (2008). Societal burden of clinically anxious youth referred for treatment: A cost-of-illness study. *Journal of Abnormal Child Psychology*, 36, 487–497.
- Bogels, S.M., & Brechman-Toussaint, M.L. (2006). Family issues in child anxiety: Attachment, family functioning, parental rearing and beliefs. *Clinical Psychology Review*, 26, 834–856.
- Bowen, D.J., Kreuter, M., Spring, B., Cofta-Woerpel, L., Linnan, L., Weiner, D., ... & Fernandez, M. (2009). How we design feasibility studies. *American Journal of Preventive Medicine*, 36, 452–457.
- Briggs-Gowan, M.J., Carter, A.S., Irwin, J.R., Wachtel, K., & Cicchetti, D.V. (2002). Brief infant-toddler social and emotional assessment (BITSEA) manual, version 2.0.
- Burriss, J.L., Reider, L.B., Oleas, D.S., Gunther, K.E., Buss, K.A., Pérez-Edgar, K., Field, A.P., & LoBue, V. (2022). Moderating effects of environmental stressors on the development of attention to threat in infancy. *Developmental Psychobiology*, 64, e22241. <https://doi.org/10.1002/dev.22241>
- Carter, A.S., Briggs-Gowan, M.J., Jones, S.M., & Little, T.D. (2003). The infant-toddler social and emotional assessment (ITSEA): Factor structure, reliability, and validity. *Journal of Abnormal Child Psychology*, 31, 495–514.

- Cartwright-Hatton, S., Abeles, P., Dixon, C., Holliday, C., & Hills, B. (2014). Does parental anxiety cause biases in the processing of child-relevant threat material? *Psychology and Psychotherapy: Theory, Research and Practice*, *87*, 155–166.
- Cartwright-Hatton, S., Ewing, D., Dash, S., Hughes, Z., Thompson, E.J., Hazell, C.M., ... & Startup, H. (2018). Preventing family transmission of anxiety: Feasibility RCT of a brief intervention for parents. *British Journal of Clinical Psychology*, *57*, 351–366.
- Cartwright-Hatton, S., Roberts, C., Chitsabesan, P., Fothergill, C., & Harrington, R. (2004). Systematic review of the efficacy of cognitive behaviour therapies for childhood and adolescent anxiety disorders. *British Journal of Clinical Psychology*, *43*, 421–436.
- Challacombe, F.L., Salkovskis, P.M., Woolgar, M., Wilkinson, E.L., Read, J., & Acheson, R. (2017). A pilot randomized controlled trial of time-intensive cognitive-behaviour therapy for postpartum obsessive-compulsive disorder: Effects on maternal symptoms, mother-infant interactions and attachment. *Psychological Medicine*, *47*, 1478–1488.
- Christensen, H., & Hickie, I.B. (2010). Using e-health applications to deliver new mental health services. *Medical Journal of Australia*, *192*, S53–S56.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. New York: Routledge Academic.
- Creswell, C., Cruddace, S., Gerry, S., Gitau, R., McIntosh, E., Mollison, J., ... & Cooper, P.J. (2015). Treatment of childhood anxiety disorder in the context of maternal anxiety disorder: A randomised controlled trial and economic analysis. *Health Technology Assessment*, *19*, 1–218.
- Egliston, K.-A., & Rapee, R.M. (2007). Inhibition of fear acquisition in toddlers following positive modelling by their mothers. *Behaviour Research and Therapy*, *45*, 1871–1882.
- Eley, T.C., McAdams, T.A., Rijdsdijk, F.V., Lichtenstein, P., Narusyte, J., Reiss, D., ... & Neiderhiser, J.M. (2015). The intergenerational transmission of anxiety: A children-of-twins study. *American Journal of Psychiatry*, *172*, 630–637.
- Ginsburg, G.S., Drake, K.L., Tein, J.-Y., Teetsel, R., & Riddle, M.A. (2015). Preventing onset of anxiety disorders in offspring of anxious parents: A randomized controlled trial of a family-based intervention. *American Journal of Psychiatry*, *172*, 1207–1214.
- Henry, J.D., & Crawford, J.R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *44*, 227–239.
- Jacob, M.L., Suveg, C., & Whitehead, M.R. (2014). Relations between emotional and social functioning in children with anxiety disorders. *Child Psychiatry & Human Development*, *45*, 519–532.
- James, A.C., Reardon, T., Soler, A., James, G., & Creswell, C. (2020). Cognitive behavioural therapy for anxiety disorders in children and adolescents. *The Cochrane Database of Systematic Reviews*, *11*, CD013162.
- Jones, L.B., Hall, B.A., & Kiel, E.J. (2021). Systematic review of the link between maternal anxiety and overprotection. *Journal of Affective Disorders*, *295*, 541–551.
- Karabekiroglu, K., Briggs-Gowan, M.J., Carter, A.S., Rodopman-Arman, A., & Akbas, S. (2010). The clinical validity and reliability of the Brief Infant-Toddler Social and Emotional Assessment (BITSEA). *Infant Behavior and Development*, *33*, 503–509.
- Kessler, R.C., Ruscio, A.M., Shear, K., & Wittchen, H.-U. (2009). Epidemiology of anxiety disorders. In *Behavioral neurobiology of anxiety and its treatment* (pp. 21–35). Berlin & Heidelberg: Springer.
- Kiel, E.J., Premo, J.E., & Buss, K.A. (2016). Maternal encouragement to approach novelty: A curvilinear relation to change in anxiety for inhibited toddlers. *Journal of Abnormal Child Psychology*, *44*, 433–444.
- Lawrence, P.J., Murayama, K., & Creswell, C. (2019). Systematic review and meta-analysis: Anxiety and depressive disorders in offspring of parents with anxiety disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, *58*, 46–60.
- Lebowitz, E.R., Leckman, J.F., Silverman, W.K., & Feldman, R. (2016). Cross-generational influences on childhood anxiety disorders: Pathways and mechanisms. *Journal of Neural Transmission*, *123*, 1053–1067.
- Lebowitz, E.R., Shic, F., Campbell, D., MacLeod, J., & Silverman, W.K. (2015). Avoidance moderates the association between mothers' and children's fears: Findings from a novel motion-tracking behavioral assessment. *Depression and Anxiety*, *32*, 91–98.
- Lovibond, P.F., & Lovibond, S.H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, *33*, 335–343.
- Merikangas, K.R., Avenevoli, S., Dierker, L., & Grillon, C. (1999). Vulnerability factors among children at risk for anxiety disorders. *Biological Psychiatry*, *46*, 1523–1535.
- Perlman, S.B., Lunkenheimer, E., Panlilio, C., & Pérez-Edgar, K. (2022). Parent-to-child anxiety transmission through dyadic social dynamics: A dynamic developmental model. *Clinical Child and Family Psychology Review*, *25*, 110–129.
- Polanczyk, G.V., Salum, G.A., Sugaya, L.S., Caye, A., & Rohde, L.A. (2015). Annual Research Review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry*, *56*, 345–365.
- Price, N.N., & Kiel, E.J. (2022). Longitudinal links among mother and child emotion regulation, maternal emotion socialization, and child anxiety. *Research on Child and Adolescent Psychopathology*, *50*, 241–254. <https://doi.org/10.1007/s10802-021-00804-1>
- Remes, O., Brayne, C., van der Linde, R., & Lafortune, L. (2016). A systematic review of reviews on the prevalence of anxiety disorders in adult populations. *Brain and Behavior*, *6*, e00497.
- Robinson, R., & Cartwright-Hatton, S. (2008). Maternal disciplinary style with preschool children: Associations with children's and mothers' trait anxiety. *Behavioural and Cognitive Psychotherapy*, *36*, 49–59.
- Strawn, J.R., Lu, L., Peris, T.S., Levine, A., & Walkup, J.T. (2021). Research Review: Pediatric anxiety disorders – What have we learnt in the last 10 years? *Journal of Child Psychology and Psychiatry*, *62*, 114–139.
- Suarez, G.L., Morales, S., Miller, N.V., Penela, E.C., Chronis-Tuscano, A., Henderson, H.A., & Fox, N.A. (2021). Examining a developmental pathway from early behavioral inhibition to emotion regulation and social anxiety: The moderating role of parenting. *Developmental Psychology*, *57*(8), 1261–1273. <https://doi.org/10.1037/dev0001225>
- Turner, S.M., Beidel, D.C., Roberson-Nay, R., & Tervo, K. (2003). Parenting behaviors in parents with anxiety disorders. *Behaviour Research and Therapy*, *41*, 541–554.
- Van Ameringen, M., Mancini, C., & Farvolden, P. (2003). The impact of anxiety disorders on educational achievement. *Journal of Anxiety Disorders*, *17*, 561–571.
- Weiner, B.J., Lewis, C.C., Stanick, C., Powell, B.J., Dorsey, C.N., Clary, A.S., ... & Halko, H. (2017). Psychometric assessment of three newly developed implementation outcome measures. *Implementation Science*, *12*, 108.

Accepted for publication: 22 June 2022