Efficacy of a Danish Version of the Cool Kids Program

A Randomized Wait-List Controlled Trial

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Abstract

Objective: The purpose of the study was to evaluate the efficacy of a Danish version of the Cool Kids Program, a generic manualized group cognitive behavioral therapy (CBT) program for anxiety disorders among children and adolescents. **Method**: Children and adolescents (age 7–16) with a primary anxiety disorder diagnosis (n = 109) were randomly allocated to group CBT or a wait-list control condition at a Danish university clinic. **Results**: Results showed that the Danish version of the Cool Kids Program was efficacious with 48.2% free of all anxiety diagnoses at post-treatment, compared to 5.7% in the wait-list condition, and large effect sizes on self-report measures of child anxiety symptoms rated by child, mother, and father (η_p^2 range = 0.18–0.24). Children and adolescents improved further from post-treatment to 3-month follow-up and this improvement was maintained at 12-month follow-up. Participants with a primary diagnosis of social phobia showed less improvement compared to other anxiety diagnoses. **Conclusion**: The study contributes to the evidence base for the Cool Kids Program, previously only evaluated by its developers in Australia. Generic group CBT programs may not be the most appropriate treatment for children and adolescents with primary social phobia.

Keywords: randomized controlled trial; cognitive behavioral therapy; anxiety; children; adolescents

Significant outcomes:

- The Danish version of the Cool Kids program was found to be efficacious for treating youth anxiety disorders. The study is the first independent evaluation of the Cool Kids Program, and the first evaluation of a cognitive behavioral therapy (CBT) program for youth anxiety disorders in Denmark.
- The significant improvements from the treatment were maintained at 3- and 12-month follow-up.
- Youths with primary social phobia showed significantly poorer outcome of the generic group CBT program.

Limitations:

- The treatment was compared only to a passive control condition (wait-list).

Introduction

Anxiety disorders are the most common psychiatric disorders among children and adolescents (both age groups are hereafter referred to as youths, unless age differences are specifically considered). A recent epidemiological meta-analysis (1) estimated the prevalence of anxiety disorders to be 12.3% for children (age 6–12) and 11.0% for adolescents (age 13–18). Without treatment, anxiety disorders among youths are often chronic or recurrent (2,3), and they have been associated with social and academic impairment (4,5), as well as increased risk of developing other anxiety disorders (6), depression (7), conduct disorder (8), or substance abuse (9) later in life. The past two decades have witnessed an increasing number of studies on cognitive behavioral therapy (CBT) for youths with anxiety disorders. Two recent meta-analyses identified 48 (10) and 41 (11) randomized controlled trials of CBT for youth anxiety and concluded that CBT is an efficacious intervention for youth anxiety disorders. However, independent replications of specific CBT protocols are still warranted as a wide range of different CBT programs with varying duration, format (group/individual), age range, diagnostic focus (generic/diagnosis specific), and degree of parental inclusion are used (11). Replications in different cultures are also warranted, as a large part of the different CBT programs have primarily been evaluated by its developers in the countries they originated in. For example, the efficacy of the Cool Kids Program has been examined in studies conducted by its developers in Australia (12-15) but, to the best of the

authors' knowledge, it has not been evaluated by an independent research group or outside Australia.

The Cool Kids Program was developed at the Centre for Emotional Health, at Macquarie University, Australia (16). It is a manualized group CBT program for any type of anxiety disorders in youths (age 6–18 years) and has separate workbooks for children (6–12 years) and adolescents (13–18 years). The version for adolescents, the *Chilled Adolescents* program, includes the same treatment components as Cool Kids, but with a different wording better suited for this age group (both versions are referred to as the Cool Kids Program in the present study). Cool Kids is a relatively short program consisting of 10 two-hour sessions with 4–8 youths and their parents in a group. The short duration and the group format of the program may contribute to its cost-effectiveness. The treatment of different anxiety disorders in the same program may facilitate its practical utility due to the high degree of comorbidity among anxiety disorders (40–60%) (17) and in most clinical settings treating youths with anxiety disorders, it may be easier to form diagnostically mixed groups rather than homogeneous groups. However, a recent meta-analysis has indicated that generic format of CBT may be less effective for youths with primary social phobia (SoP), obsessive-compulsive disorder (OCD), and posttraumatic stress disorder (PTSD) compared to disorder-specific CBT protocols for these disorders (10).

Aims of the Study

The primary aim of the study was to evaluate the efficacy of a Danish version of the Cool Kids Program for anxiety disorders in youth. It was further explored if the program was differentially efficacious for specific anxiety disorders.

Material and Methods

Participants

Participants were 109 youths with anxiety disorders recruited from a training and research clinic at the Department of Psychology and Behavioural Sciences, Aarhus University, Denmark, in the period from January 2011 to April 2012. The youths were in the age of 7–16 years (*M* = 11.78, *SD* = 2.74) with 62 (57%) being girls. The inclusion criterion was an anxiety disorder as the primary diagnosis. Exclusion criteria were psychosis, untreated ADHD, intellectual disability, and severe behavior disorders. Participants were diagnosed with the Anxiety Disorder Interview Schedule for DSM-IV, Parent and Child Versions (18). Youths fulfilling the enrollment criteria were randomly allocated into either a treatment or a wait-list (WL) control condition. The randomization procedure was done in three blocks of six groups per block (with six to seven participants per group) stratified according to age groups (7–9, 10–12, 13–16 years), resulting in three groups for each age group in each condition. For allocation of the participants, a computer-generated list of random numbers was used (http://www.random.org). The sequence list and the allocation were administrated by the clinic's secretary and kept concealed from researchers and therapists until start of treatment. Participants in both conditions were encouraged not to engage in other forms of treatment or change psychopharmacological medication during the treatment or WL period.

All families signed a written consent form after they had received oral and written information about the study. The study was approved by the local county Ethical Committee and by the Danish Data Protection Agency.

Measures

Primary Outcome Measures

The *Anxiety Disorder Interview Schedule for DSM-IV, Parent and Child Versions* (ADIS-IV C/P) (18) is a semi-structured interview developed to assess youth anxiety disorders according to DSM-IV and is based on information from separate interviews with the youths and their parents. Besides the assessment of anxiety disorders, the ADIS-IV allows for assessment of other disorders often associated with anxiety, including depression, dysthymia, oppositional disorder, conduct disorder, and ADHD. All disorders are rated with a clinical severity rating (CSR) from 0 (no interference) to 8 (extreme interference). Severity ratings of 4 or above indicate the presence of a disorder. Separate CSRs are made by youths, parents, and the clinician, but in the current study only the CSRs provided by the clinician are reported. The most impairing diagnosis, as assessed by the clinician, was considered the primary diagnosis. Diagnostic interviews were conducted by psychologists or graduate students trained in the use of ADIS-IV C/P. The training consisted of watching two golden standard interviews on video, observing two live interviews, and conducting one satisfactory ADIS interview with a client while an experienced ADIS-assessor observed. Student assessors received supervision on all their interviews.

ADIS-IV C/P has in other studies demonstrated good to excellent 7–14 days test-retest reliability for the presence of specific diagnoses (Cohen's Kappa [κ] range for different diagnoses = .63–.80 for youth interviews and .65–.88 for parent interviews) and the CSR (intraclass correlation coefficient range for different diagnoses = .78–.95 for youth interviews and .81–.96 for parents interviews) (19). Strong concurrent validity in relation to the Multidimensional Anxiety Scale for Children (MASC) (20) has also been demonstrated (21). In the present study, an interrater reliability check was conducted by letting two trained assessors watch and rate 22 (20.2%) of the

video-recorded baseline interviews. The interrater reliability (κ) for the primary anxiety diagnosis was .77. The intraclass correlation coefficient for the CSR of the primary anxiety diagnosis was .69 (two-ways mixed for individual raters, consistency).

The *Spence Children's Anxiety Scale* (SCAS) is a self-report rating scale for youths to assess their anxiety symptoms (22). It consists of 44 items (including six positive filler items) rated from 0 (*never*) to 3 (*always*). The scale consists of six subscales for specific anxiety diagnoses: SoP, panic disorder and agoraphobia, generalized anxiety disorder (GAD), OCD, separation anxiety disorder (SAD), and specific phobias (SP [fear of physical injury]). Each subscale may be scored separately as well as added together for a score of overall anxiety symptoms. The Danish translation of SCAS has demonstrated excellent internal consistency for the total scale (α = .89) in a sample of youths with anxiety disorders and good test-retest reliability after two weeks (r = .84) and three months (r = .83) in a community sample (23). Internal consistency for the total scale in the current sample was excellent (α = .90).

The *Spence Children's Anxiety Scale – Parent Version* (SCAS-P) contains the same items as the youth-reported version, with exception of the six positive filler items, and it is scored in the same way (24). The Danish translation of SCAS-P has demonstrated good internal consistency for the total scale (α = .87) in an anxiety disorder sample and good test-retest reliability after two weeks (r = .88) and three months (r = .81) in a community sample (23). Internal consistency for the total scale in the current sample was excellent for mother (SCAS-Pm; α = .89) and father reports (SCAS-Pf; α = .87).

Secondary Measures

The *Child Anxiety Life Interference Scale* (CALIS) assesses life interference and impairment associated with youth anxiety (e.g., school, leisure time, and getting along with friends and family) rated separately by the youth (9 items) and the parents (9 items) (25). Parents also rate interference with their own life (e.g., career, stress and relationship with spouse, friends, and family) attributed to the youth's anxiety (7 items). All items are rated on five point Likert scales from 0 (*not at all*) to 4 (*a great deal*). CALIS consists of subscales measuring interference with the youth's life at home and outside home, but in the current study they were combined into a single measure of overall interference. The scale has demonstrated satisfactory internal consistency on subscales for both youth (α range = .70–.84) and parent ratings (α range = .75–.90) and moderate stability for a two-month retest period (r range = .62–.91) (25). In the current study Cronbach's α was .81 for youth-reported and .83 for both mother- and father-reported overall interference with the youth's life. Internal consistency for interference on parent life was .87 for mothers and .89 for fathers.

The short version of the *Mood and Feelings Questionnaire* (S-MFQ) consists of 13 items rated from 0 (*not true*) to 2 (*true*) to assess youth depressive symptoms within the last two weeks rated separately by the youth and the parents (26). The S-MFQ has shown good internal consistency in youth self-reports (α = .85) and the parent-reports (α = .87) (26). In the current study internal consistency was excellent (youth version, α = .89; mother-report, α = .88; father-report, α = .88).

The *Becks Youth Inventories* (BYI) is a youth self-report inventory consisting of five separate scales for anxiety, depression, anger, disruptive behavior, and self-concept (27). Each scale consists of 20 items rated from 0 (*never*) to 3 (*always*) on how well they describe the youth. In the current study

only the scale for self-concept (BYI-S) was used. BYI-S assesses the youth's self-perceived competences and self-worth. An evaluation of the Danish translation of BYI confirmed the hypothesized factor structure with five scales and demonstrated good internal consistency (α = .87–.89) for BYI-S (28). In the current study Cronbach's α was .93 for BYI-S.

The *Experience of Service Questionnaire* (ESQ) is a measure to assess the youth's and parents' satisfaction with the treatment (29). There are separate versions for youths, with 7 items, and parents, with 10 items, rated 0 (*not true*), 1 (*partly true*), or 2 (*true*). Both versions have an open comment section while the parent version has an additional two questions where parents can comment on what they liked about the treatment and what could be improved.

The following measures were also included in the study but not reported here: *Children's Automatic Thought Scale* (CATS) (30), *Self-Efficacy Questionnaire for Children* (SEQ) (31), *Depression Anxiety Stress Scales* (DASS) (32) for parents, *Rearing Behavior Questionnaire* (RBQ) (33), *Clinical Global Impression - Improvement Scale* (CGI-I) (34), and *Children's Global Assessment Scale* (C-GAS) (35).

Conditions

The Cool Kids is a manualized group CBT program that has a focus on teaching youths to recognize their emotions, restructure negative automatic thinking and gradually confront feared situations. The treatment consisted of 10 two-hour weekly group sessions with six to seven youths and their parents in each group. In the current trial there was a mean of 74.44 (*SD* = 7.44) days between the first and the last session. The mean number of sessions attended by youths, mothers, and fathers were 9.25 (*SD* = 0.84), 8.82 (*SD* = 1.64), and 7.45 (*SD* = 3.01), respectively. In most cases (91.07%) both parents participated in the treatment with the exception of one mother and four fathers who

did not participate in any sessions. None of the youths attended less than seven sessions (the preset limit to define drop-out) and thus all of the families randomized to the intervention completed treatment. Danish translated workbooks for youths (36,37) and parents (38,39) were handed out in the first session. The workbooks outlined the theme for each session and assignments to be carried out in and between sessions. The in vivo exposure assignments suggested in the Cool Kids manual for session 8 took place at a local shopping mall. Three months after the end of treatment participants were offered a one-hour booster group session. Each group was led by one of two psychologists who were trained and supervised in the use of the Cool Kids Program by an authorized specialist in psychotherapy who had received training in the Cool Kids Program at Macquarie University (the second author of this paper). As part of an educational program at the university clinic, three graduate psychology students participated in each group and assisted the youths during the in-session assignments. During the education program the students followed a theoretical course on anxiety disorders and their treatment. Furthermore, students received weekly group supervision on their participation in the treatment program.

The control condition was a 3-month WL. All participants in the WL condition were offered the Cool Kids treatment after the waiting period. Of the 53 participants in the WL, 46 (86.79%) accepted the subsequent treatment offer. Of those 46 participants, 43 (93.48%) completed at least seven sessions.

Design and procedure

Post-assessment and assessment at 3-month follow-up consisted of ADIS-IV C/P interviews and all electronically administered rating scales. ADIS-IV C/P assessors were blinded at post-treatment and follow-up assessments to the youth's allocated condition and prior diagnoses.

Assessment 12 months after the end of treatment consisted of electronically administered SCAS and CALIS. As part of another study, non-responders in the treatment condition at the 3-month follow-up were offered further individualized treatment (assessment of non-response was based on the therapist-administered CGI-I). In total 12 participants across both conditions were lost to 12-month follow-up due to starting in the individualized treatment after the 3-month assessment. Figure 1 illustrates the flow of participants through the study.

[Insert Figure 1 here]

Prior to assessment for eligibility, all families had referred themselves to the Anxiety Disorder Clinic, Aarhus University, Denmark, in response to the clinic's webpage, newspaper advertisements, or recommendations from local community health services. Families were required to send in an e-mail or a letter to the clinic describing the youth's anxiety symptoms, and relevant families were invited to the clinic for an initial diagnostic assessment (ADIS-IV C/P). Electronically administrated rating scales were sent by e-mail to the families to complete prior to their appearance at the clinic. Families received three weekly reminders via e-mail followed by a phone call after four weeks if they failed to complete the electronically administrated rating scales at any assessment point.

Statistical Analyses

Baseline comparisons between the two conditions were carried out using independent samples t-tests or chi-square tests as appropriate. Pre-post comparisons between the two conditions were analyzed in the form of 1) number of participants free of primary or all diagnoses after treatment; 2) degree of change on continuous outcome measures from pre to post; and 3) number of participants with clinical significant change on the SCAS/SCAS-P. For the pre-post comparisons on continuous measures between the two conditions, 2 x 2 mixed between (condition: CBT vs. WL) – within (time: pre vs. post) analyses of variance (ANOVAs) were conducted. Clinical significant change was calculated by the method suggested by Jacobson and Truax (40) for the SCAS/SCAS-P. In addition to a significant change score (reliable change index [RCI]), youths also had to score above the cutoff line between anxious and non-anxious youths at pre- and below at post-treatment. The cutoff and RCI were calculated using Danish community and clinical norms split into gender and age groups (7–12 and 13–17 years) (23). Analysis of maintenance of treatment outcome from post-treatment to 3- and 12-month follow-ups was conducted on SCAS and CALIS using repeated measure ANOVA with Bonferroni correction for multiple pairwise comparisons (corrected significant level, p = .017). Greenhouse-Geisser correction was used when the assumption of sphericity was violated. Paired samples t-tests were conducted for analysis of maintenance of outcome from post-treatment to 3-month follow-up on ADIS CSR, S-MFQ and BYI-S. Cohen's *d* for repeated measures was calculated by subtracting the post-mean from the pre-mean and divided by the pooled standard deviation of those two means ($[M_{pre} - M_{post}]/SD_{pooled}$). All pre-post comparisons between conditions were based on intention to treat (ITT) analyses using the *last observation carried forward* approach.

Since participants in the treatment condition were treated in groups, intragroup dependency was assessed by calculating intra-class correlations (ICC) for all outcome measures to test if assumptions of independence of observations were violated (41). The formula used for calculating ICC correlations was: ICC = ($MS_{\text{between group}}$ - $MS_{\text{within group}}$)/($MS_{\text{between group}}$ + [n - 1] $MS_{\text{within group}}$), where n represents the number of participants per group. As the number of participants in the nine intervention groups varied in the current trial, n was adjusted by the formula: (number of groups) / ([1/n_1] + [1/n_2] +…+ [1/n_9]), resulting in n = 6.2. For all outcome measures ICC were negative (-0.18 – -0.08) at pre- and post-treatment, and thus there were no signs of group dependency.

Analyses assessing stability of outcome from post-treatment to follow-up were conducted only on data from participants who completed treatment. A last observation carried forward approach may here risk overestimating the stability of treatment gains due to a likely higher dropout rate among relapsing participants. All follow-up analyses were conducted on the pooled data from participants in the CBT condition and the WL condition after they had received treatment. Such an approach may be acceptable since there were neither significant differences on outcome measures between the two conditions at post-treatment, nor interaction effects in the follow-up period. All statistical analyses were carried out using *Statistical Product and Service Solutions* (SPSS) version 21.0.0.2.

Results

Baseline Comparison

Table 1 shows demographic and diagnostic information on the two conditions at baseline and Table 2 shows information on outcome measures at pre-and post-assessment. No significant differences were found between conditions on mean age, gender distribution, income, highest completed education of parents, type of primary anxiety disorder, or any of the continuous outcome measures in Table 2.

Of the five participants who were on psychopharmacological medication in the treatment condition, three had stopped or reduced their use at the post-assessment. Of the four participants who were on psychopharmacological medication in the wait-list condition, two had stopped or reduced their use at post-assessment. No participants in either condition started new or increased their use of psychopharmacological medication in the treatment period.

[Insert Table 1 here]

[Insert Table 2 here]

Post-Treatment Outcomes

At post-treatment significantly more youths (37 [66.1%]) in the intervention condition were free of their primary diagnosis, compared to youths (4 [7.5%]) in the WL condition, χ^2 (1) = 39.74, $p < .001$. Also, significantly more youths (27 [48.2%]) in the intervention condition were free of all anxiety diagnoses, compared to youths (3 [5.7%]) in the WL condition, χ^2 (1) = 24.72, $p < .001$.

Table 2 shows the mean scores, standard deviations, pre-post effect sizes (Cohen's *d*), and interaction effects for all continuous outcome measures at pre- and post-treatment for both conditions. There was a significant interaction between time and condition for the CSR for the primary as well as for the sum of all anxiety diagnoses (see Figure 2 and Table 2), indicating significantly greater anxiety reduction in the intervention condition compared to the WL condition. There was also a main effect of time (primary: $p < .001$; all: $p < .001$) and a main effect of condition (primary: $p < .001$; all: $p = .005$) for the primary anxiety diagnosis and the sum of all anxiety diagnoses.

[Insert Figure 2 here]

For the pre-post comparison on SCAS there was a significant interaction between time and condition for the youth, mother, and father reports (see Table 2), indicating a significantly greater reduction in youth anxiety symptoms in the treatment condition compared to the WL condition. There was also a main effect of time for the youth-, mother-, and father-reported SCAS (SCAS: $p < .001$; SCAS-Pm: $p < .001$; SCAS-Pf: $p < .001$). There was a main effect of condition for SCAS-Pm ($p = .005$), driven by the intervention group, but not for SCAS-Pf ($p = .189$) or SCAS ($p = .053$).

There was also an interaction effect on all secondary outcome measures (except father reported S-MFQ), with significantly greater improvement in the treatment group on youth depressive symptoms (S-MFQ), self-concept (BYI-S), and everyday life interference for the youth (CALIS) and the parents (CALIS-P) as attributed to the youth's anxiety disorder (see Table 2).

The number of youths who reached clinical significant change at post-assessment were for SCAS = 24 (42.9%) for CBT and 6 (11.3%) for WL; SCAS-Pm = 29 (51.8%) for CBT and 6 (11.3%) for WL;

SCAS-Pf = 23 (41.8%) for CBT and 5 (9.8%) for WL. These differences were significant across all raters (SCAS, χ^2 (1) = 13.58, $p < .001$; SCAS-Pm, χ^2 (1) = 20.45, $p < .001$; SCAS-Pf, χ^2 (1) = 13.95, $p < .001$).

Treatment Maintenance: 3- and 12-Month Follow-Up

For the pooled sample, 60 (63.2%) youths were free of their primary anxiety diagnosis and 42 (44.2%) were free of all their anxiety diagnoses at post-treatment, while at 3-month follow-up 70 (73.7%) youths were free of their primary anxiety diagnosis and 55 (57.9%) were free of all their anxiety diagnoses.

Table 3 shows means, standard deviations, test statistics, and effect sizes for all outcome measures from post-treatment to 3- and 12-month follow-up based on the pooled data of participants from both conditions.

[Insert Table 3 here]

For the pooled sample, the number of youths who reached clinical significant change at post-treatment was for SCAS = 25 (40.3%), SCAS-Pm = 35 (50.0%), and SCAS-Pf = 25 (41.7%), which increased significantly at 3-month follow up across all raters, SCAS = 31 (50.0%), χ^2 (1) = 41.89, $p < .001$; SCAS-Pm = 42 (60.0%), χ^2 (1) = 34.29, $p < .001$; and SCAS-Pf = 33 (55.0%), χ^2 (1) = 23.71, $p < .001$, as well as from post-treatment to 12-month follow up, SCAS = 32 (51.6%), χ^2 (1) = 39.27, $p < .001$; SCAS-Pm = 41 (58.6%), χ^2 (1) = 25.96, $p < .001$; and SCAS-Pf = 32 (53.3%), χ^2 (1) = 25.75, $p < .001$.

Treatment Satisfaction

According to the answers on ESQ, families were highly satisfied with the treatment. For the statement "T*he treatment help me/my child?*", 74 (79.6%) youths, 70 (72.9%) mothers, and 64 (69.6%) fathers scored 2 (*true*), while 5 (5.4%) youths, 2 (2.1%) mothers, and 2 (2.2%) fathers answered 0 (*not true*) to this statement. For the statement "*We feel better in the family now compared to before the treatment*", 60 (64.5%) youths, 74 (77.1%) mothers, and 64 (69.6%) fathers answered 2 (*true*), while 10 (10.8%) youths, no mothers, and 2 (2.2%) fathers answered 0 (*not true*). For the statement "*If a friend needed this type of help, I would recommend him/her coming to the clinic*", 76 (81.7%) youths, 92 (95.8%) mothers, and 84 (91.3%) fathers answered 2 (*true*), while 4 (4.3%) youths, 10 (10.4%) mothers, and 7 (7.6%) fathers answered 0 (*not true*) to this question. No youths or parents answered 2 (*true*) to whether the treatment had made the youth feel worse, although 7 (7.5%), 6 (6.3%) and 2 (2.2%) youths, mothers and fathers, respectively, answered 1 (*partly true*). Most qualitative comments on the program were highly positive. However, in the comments on what could be improved in the program, 40 (36%) mothers and 21 (19%) fathers stated that the program was too short or there was too little time between sessions.

Diagnosis-Specific Results

For each of the different primary diagnoses in the pooled sample the number of youths free of their primary diagnosis at post-treatment (ITT analysis) was: SAD = 20 (62.5%), GAD = 20 (87.0%), SoP = 5 (29.4%), SP = 11 (68.8%), OCD = 5 (62.5%), PD with AP = 1 (100%), and AP without PD = 3 (60.0%). A chi-squared test with four groups (i.e., ignoring the three small diagnostic groups of OCD, PD with AP, and AP without PD) revealed that there was a significant association between the type of primary diagnosis at pre-treatment and whether or not participants were free of their

primary diagnosis at post-treatment, χ^2 (3) = 14.21, p = .003. Comparing SoP with all other primary diagnoses merged together revealed that participants with a primary SoP diagnosis were significantly less likely to be free of their primary diagnosis at post-treatment than youths with any other primary diagnosis, χ^2 (1) = 10.39, p < .001.

There was a significant interaction effect between time (pre- vs. post-treatment) and primary diagnosis (SAD, GAD, SoP, SP, OCD, PD with AP, or AP without PD) on ADIS CSR of the primary diagnosis, F (6, 95) = 4.00, p < .001, η_p^2 = 0.20. A simple effect post-hoc analysis indicated that the interaction effect was driven by significantly less decrease in mean CSR for a primary diagnosis of SoP (M = 1.53, SE = 0.54) compared to SAD (M = 3.69, SE = 0.40), GAD (M = 4.96, SE = 0.47), SP (M = 3.75, SE = 0.56), OCD (M = 3.13, SE = 0.79), PD with AP (M = 3.00, SE = 2.24) and, AP without PD (M = 4.20, SE = 1.00). However, there was no interaction effect between time and primary diagnosis on youth reported SCAS, F (6, 95) = 0.49, p = .818, η_p^2 = 0.03. There was a main effect of time, F (6, 95) = 28.30, p < .001, η_p^2 = 0.23, driven by all primary diagnoses (except PD with AP) had significant decrease from pre to post-treatment. There was no main effect of condition, F (6, 95) = 1.77, p = .113, η_p^2 = 0.10.

Post-hoc ANOVA revealed that there was significant difference in mean age between different primary diagnoses F (6, 95) = 7.38, p < .001, η_p^2 = 0.32, with social phobic youth being significantly older (M = 13.96, SD = 1.55) than youths with SAD (M = 10.46, SD = 1.76) and GAD (M = 11.56, SD = 2.14). Youths with primary social phobia were also significantly more likely to have a comorbid mood disorder (47.1%) compared to youths with any other primary diagnosis (5.9%), p < .001 (Fisher's exact). However, there was still a significant interaction effect between time and primary diagnosis on ADIS CSR of the primary diagnosis when controlling for age and comorbid mood

disorder, F (6, 90) = 2.80, p = .015, η_p^2 = 0.16, with social phobic youths improving significantly less. The same was true when excluding youths with comorbid mood disorders from the analysis.

Discussion

The study evaluated a Danish version of the Cool Kids Program for youth anxiety disorders at a university clinic in Aarhus, Denmark. It is the first independent evaluation of the Cool Kids Program conducted by another research group than the program's developers. It is also the first evaluation of a CBT program for youth anxiety disorders in Denmark where there are few treatment possibilities and no health insurance for psychological treatment of such disorders. The sample of the study was characterized by a rather high degree of comorbidity (70.64% with comorbid anxiety) and also a rather high degree of self- and parent-reported anxiety symptoms at pre-treatment (SCAS: M = 39.17, SCAS-Pm: M = 39.95, SCAS-Pf: M = 36.08; compared to norms of anxiety disordered youths in North America, SCAS: 35.82, SCAS-P: 29.70) (42).

The Danish version of Cool Kids was found to be efficacious with 37 youths (66.1%) free of their primary anxiety diagnosis and 27 (48.2%) free of all anxiety diagnoses at post-treatment, compared to, respectively, 4 (7.5%) and 3 (5.7%) in the WL condition. Reductions in the treatment condition were significantly greater compared to the WL condition (all with large effect sizes; i.e., $\eta_p^2 > 0.14$) across all raters on the primary outcome measures (CSR and SCAS). Also, significantly more youths in the treatment condition reached clinical significant change on SCAS and SCAS-P at post-assessment. Youths in the treatment condition also improved more than those on the WL on the secondary outcome measures of depression (S-MFQ), life interference (CALIS), and self-concept (BYI-S), although effect sizes were smaller than on the primary outcome measures.

The program was found to be feasible, as shown by a high degree of satisfaction as well as a low dropout rate among participants (three of the 102 families [2.9%] who started the treatment). Furthermore, there was a high attendance of youths, mothers, and fathers (mean number of sessions was 9.25, 8.82, and 7.45, respectively). The high attendance may reflect a high degree of motivation among participants, perhaps due to participants being self-referred and the lack of other treatment offers for youths with anxiety disorders in Denmark. Both parents participating in the majority of cases (91%). The high attendance among fathers in the present study distinguishes it from prior studies of youth anxiety (43,44), and may reflect the high equality between gender roles in the Danish society.

Results at follow-up assessments (based on the combined sample of all treated youths) indicated that youths improved even further from post-treatment to 3-month follow-up with increased remission rates (70 [73.7%] free of primary and 55 [57.9%] free of all diagnoses) and significantly reduced anxiety symptoms (ADIS CSR and SCAS; *d* range: 0.19–0.46) and life interference (CALIS; *d* range: 0.26–0.66) across all raters. Correspondingly, significantly more youths had reached clinical significant change at 3-month follow-up (SCAS = 31 [50.0%], SCAS-Pm = 42 [60.0%], and SCAS-Pf = 33 [55.0%]) compared to post-treatment (SCAS = 25 [40.3%], SCAS-Pm = 35 [50.0%], and SCAS-Pf = 25 [41.7%]). There were no significant changes on outcome measures from 3- to 12-month follow-up assessments (SCAS; CALIS) indicating a durable improvement among the youths.

The results of the study add to the existing evidence of the Cool Kids Program as an efficacious treatment for youth anxiety disorders (12,13). Compared to prior studies of the Cool Kids Program, the remission rates of the current study are similar to that of a study conducted by Rapee and colleagues in 2006 (free of all anxiety diagnoses: 48.9% [post] and 61.1% [3-month follow-up])

(13), but higher than remission rates reported in a study by Hudson and colleagues in 2009 (free of all: 33.3% [post] and 49.0% [3-month follow-up]) (12). The most recent Cochrane review of CBT studies of youths with anxiety disorders (11) found a remission rate of 59.4% for any anxiety diagnosis at post-treatment, which is somewhat higher than the remission rate in the present study at post-treatment (48.2%). However, when comparing remission rates of CBT to WL control the odds ratio for non-remission was 0.13 in the Cochrane review (11) compared to 0.11 in the present study (lower figures indicate higher effect size). Effect sizes from pre- to post-treatment on youth-reported anxiety measures (SCAS) also compares favorably to those reported in recent meta-analyses and prior studies of Cool Kids, as the relative effect size compared to passive controls (WL) was *d* = 0.94 (compared to 0.77 in the meta-analysis by Reynolds and colleagues) (10) and the within-group effect size was *d* = 1.08 (compared to 0.98 in the most recent Cochrane review; 0.40 in the study by Rapee and colleagues; and 0.71 in the study by Hudson and colleagues) (11-13).

The numerically lower remission rate in the present study (48.2%) compared to that of James et al.'s meta-analysis (59.4%) (11) may be due to a more severe sample in the present study, with 75% of youth having at least one comorbid anxiety disorder compared to approximately 40% (range 33–65%) in James et al.'s sample of studies (11). While the presence of comorbid anxiety diagnoses does not seem to reduce the amount of improvement in CBT for youth anxiety disorders, it may reduce end-state functioning resulting in fewer participants free of anxiety diagnoses after treatment (45,46).

The Cool Kids has a high degree of parental involvement, and in the present study there was an exceptionally high degree of participation of both parents (both participated in 91% of cases and

the mean number of sessions was 8.82 for mothers and 7.45 for fathers). Results from two recent meta-analyses on parent involvement in CBT for youth anxiety disorders did not find any effect of parental involvement at post-treatment (47,48), although one of the studies (48) found better outcomes at long-term follow-up for treatments with a high degree of parental involvement that focus on teaching parents to use *contingency management* to encourage children's exposures to anxiety-provoking situations. However, prior studies of CBT programs with parental involvement have usually only included mothers in the treatment (43), and it has been suggested that mothers and fathers play different roles in the development and prevention of anxiety disorders in youth (44), with some studies indicating that the addition of fathers in treatment may facilitate better treatment outcomes for children (49,50). Thus, the inclusion of both parents distinguishes the present study from prior studies of group CBT and Cool Kids, and may have had a beneficial impact on the treatment outcomes.

As mentioned in the introduction, the short group format of the Cool Kids Program may contribute to its cost-effectiveness, and treating different anxiety disorders in the same group may be expedient for its practical implementation. However, a large proportion of parents (36% mothers and 19% fathers) stated in the qualitative comments (ESQ) that they felt the program was too short or had too little time between sessions to finish homework assignments (the mean time between sessions was 8.2 days). Increasing the number of sessions in the program would likely diminish its cost-effectiveness, as a recent meta-analysis (10) concluded that providing more than 9–12 sessions did not result in better outcomes. Increasing time between sessions would allow families more time to finish their homework assignments and might improve treatment outcomes for some families.

A recent meta-analysis (10) indicated that generic format CBT programs for youth anxiety disorders may be less effective for some specific diagnoses (i.e., SoP, OCD, and PTSD). In line with previous findings (51,52), youths with SoP showed less improvement than other anxiety disorders in the current study. It has been argued that an increased rate of comorbid mood disorders in social phobic youths may account for the poorer treatment outcomes among this group (52). However, when controlling for age and the presence of comorbid mood disorders in the present study, social phobic youths still improved significantly less than youths with other primary anxiety diagnoses. In line with the guidelines recommended by the National Institute for Health and Care Excellence (53), diagnosis-specific and/or individual treatment programs may be better suited for youths with primary SoP. There were too few participants with OCD, PTSD, PD, or AP in the study to evaluate the program's specific efficaciousness for such disorders.

The study has some limitations. The inclusion of three graduate students in each group may limit the generalizability of the current study, as participating families were able to gain more assistance during sessions than would be the case in studies where only one or two therapists were available. However, it is unlikely that the addition of these students had any impact on the treatment outcomes as they only played a minor role in the treatment sessions. The treatment was compared to WL and not to an active control condition. Furthermore, the 12-month follow-up analyses excluded 12 participants due to their inclusion in another study on individualized treatment of non-responders. Also, no assessment of therapist competence or adherence to protocol was conducted. Finally, the majority of the ADIS-interviews were conducted by students with modest prior assessment experience.

In conclusion, the Danish version of the Cool Kids Program was efficacious and feasible for treating youth anxiety disorders. The outcomes in the study compared well with those of other studies on CBT for youth anxiety disorders. However, youths with a primary social phobia diagnosis achieved poorer outcomes compared to other primary anxiety diagnoses.

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Declaration of interests

The authors declare no competing interests.

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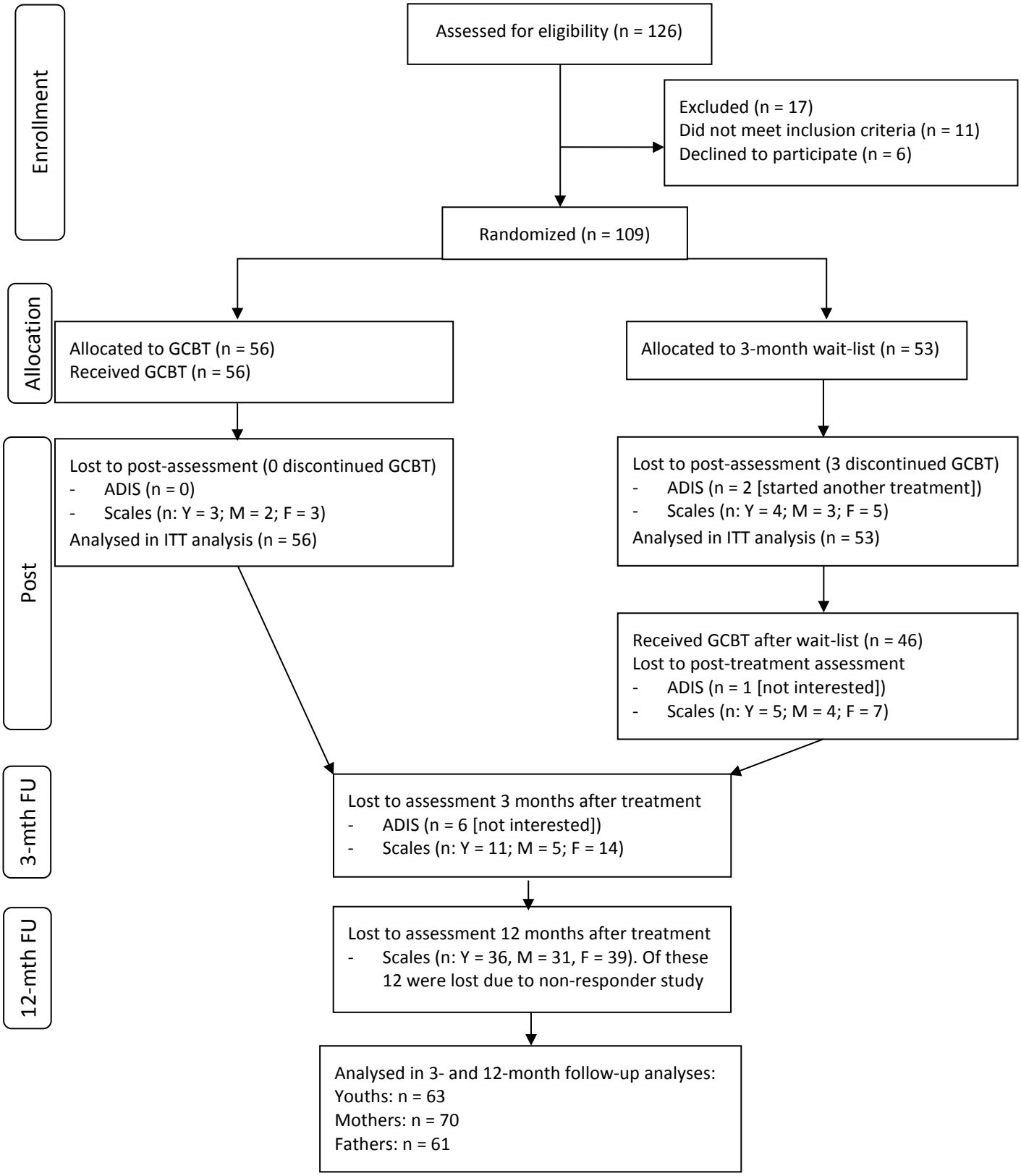
Figure 1

Flow Diagram of Participants Through the Study



Note. GCBT = group cognitive-behavioral treatment; ITT = intention to treat; FU = follow-up; ADIS = Anxiety Disorder Interview Schedule for DSM-IV; Y = youth scale; M = mother scale; F = father scale.

Table 1

Demographic and Diagnostic Characteristics

	GCBT (n = 56)	Wait-List (n = 53)
Youth mean age in years	11.82 (2.49 SD)	11.73 (2.47 SD)
Females	31 (55.5%)	31 (58.5%)
Living with two parents	47 (83.9%)	42 (79.2%)
On psychopharmacological medication	5 (8.9%)	4 (7.5%)
Annual family income in Danish kroner[a]		
> 900000 kr	4 (7.1%)	5 (9.4%)
700000 – 899000 kr	16 (28.6%)	15 (28.3%)
500000 – 699000 kr	24 (42.9%)	13 (24.6%)
< 500000 kr	12 (21.4%)	20 (37.7%)
Highest completed education of mothers / fathers		
Further and higher education	48/31 (85.7%/56.4%)	37/24 (69.9%/47.1%)
Vocational education	5/22 (8.9%/40.0%)	8/22 (15.1%/43.1%)
Elementary- or High-school equivalent	3/2 (5.4%/3.6%)	8/5 (15.0%/9.8%)
Primary diagnosis		
SAD	16 (28.7%)	20 (37.7%)
GAD	14 (25.0%)	12 (22.6%)
SoP	7 (12.5%)	10 (18.9%)
SP	11 (19.6%)	5 (9.4%)
OCD	4 (7.1%)	4 (7.6%)
PD with AP	0 (0.0%)	1 (1.9%)
AP without PD	4 (7.1%)	1 (1.9%)
Comorbid diagnoses		
Anxiety disorders	42 (75.0%)	35 (66.0%)
No comorbidity	7 (12.5%)	10 (18.9%)
Externalizing disorders	6 (10.7%)	7 (13.2%)
Mood disorder	4 (7.1%)	6 (11.3%)
Other	3[b] (5.4%)	4[c] (7.5%)
Mean number of anxiety disorders per youth	2.73	2.66

Note. GCBT = group cognitive-behavioral treatment, SAD = Separation Anxiety Disorder, GAD = Generalized Anxiety Disorder, SoP = Social Phobia, PD = Panic Disorder, OCD = Obsessive Compulsive Disorder, SP = Specific Phobia, AP = Agoraphobia, CSR = Clinician Severity Rating (ADIS C/P-IV). a: 1 US dollar ≈ 5.37 Danish kroner; b: 1 enuresis, 1 sleep terror disorder, 1 selective mutism; c: 3 sleep terror disorder, 1 enuresis.

Table 2

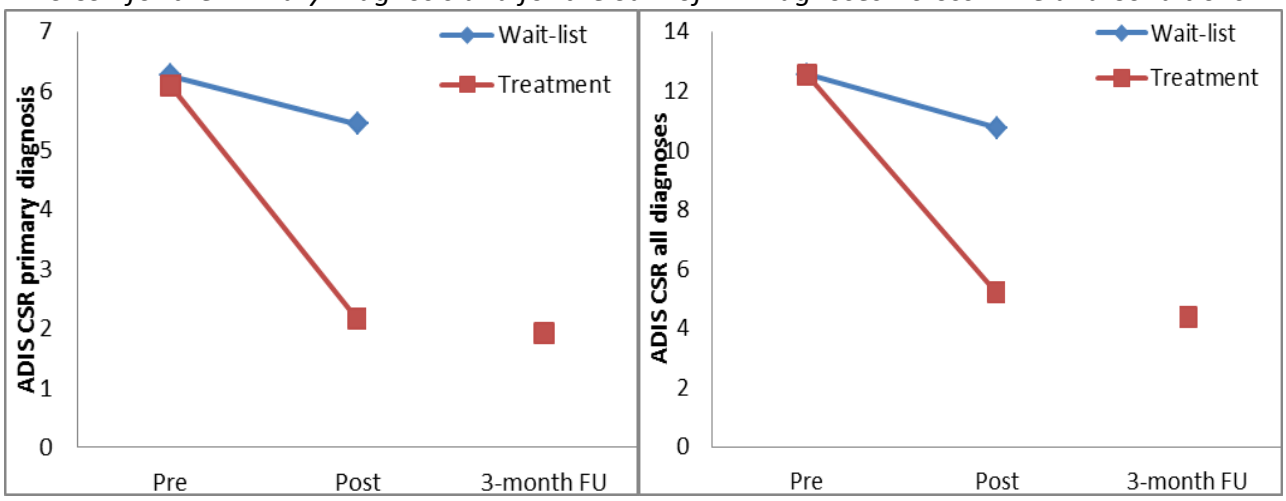
Pre- and Post-Measures of Outcome for Treatment and Wait-List Conditions

		Pre - *M* (*SD*)	Post - *M* (*SD*)	Time-by-condition effect	Pre to post effect size*
ADIS CSR	CBT	6.09 (1.07)	2.16 (2.59)	F (1, 107) = 57.49, p < .001,	p < .001, d = 1.98
primary	WL	6.25 (1.14)	5.45 (1.90)	η_p^2 = 0.35	p = .004, d = 0.40
diagnosis					
ADIS CSR all	CBT	12.54 (5.99)	5.21 (5.19)	F (1, 107) = 29.46, p < .001,	p < .001, d = 1.31
diagnoses	WL	12.55 (6.16)	10.75 (5.63)	η_p^2 = 0.22	p = .018, d = 0.31
SCAS	CBT	39.16 (18.06)	21.57 (14.42)	F (1, 107) = 22.76, p < .001,	p < .001, d = 1.08
Youth	WL	39.19 (15.00)	32.55 (15.64)	η_p^2 = 0.18	p < .001, d = 0.43
SCAS-P	CBT	39.79 (16.97)	22.25 (12.59)	F (1, 107) = 34.13, p < .001,	p < .001, d = 1.17
mother	WL	40.11 (13.63)	37.04 (16.95)	η_p^2 = 0.24	p = .058, d = 0.20
SCAS-P	CBT	37.15 (13.80)	23.56 (13.87)	F (1, 104) = 23.65, p < .001,	p < .001, d = 0.98
father	WL	34.92 (14.45)	32.63 (16.17)	η_p^2 = 0.19	p = .099, d = 0.15
CALIS	CBT	11.89 (7.35)	7.55 (6.46)	F (1, 107) = 7.23, p = .008,	p < .001, d = 0.63
Youth	WL	12.09 (6.88)	10.94 (7.20)	η_p^2 = 0.06	p = .153, d = 0.16
CALIS	CBT	17.79 (7.19)	10.61 (7.28)	F (1, 107) = 17.25, p < .001,	p < .001, d = 0.99
mother	WL	19.92 (7.75)	17.94 (9.07)	η_p^2 = 0.14	p = .041, d = 0.23
CALIS	CBT	16.05 (6.84)	10.96 (7.72)	F (1, 104) = 12.45, p < .001,	p < .001, d = 0.70
father	WL	18.35 (7.52)	17.14 (9.16)	η_p^2 = 0.11	p = .116, d = 0.14
CALIS-P	CBT	11.07 (6.91)	6.82 (6.28)	F (1, 107) = 9.24, p = .003,	p < .001, d = 0.64
mother	WL	12.13 (6.19)	11.21 (6.58)	η_p^2 = 0.08	p = .251, d = 0.14
CALIS-P	CBT	7.85 (6.09)	5.71 (5.46)	F (1, 104) = 44.39, p = .029,	p < .001, d = 0.37
father	WL	9.12 (5.69)	8.80 (6.16)	η_p^2 = 0.05	p = .632, d = 0.05
S-MFQ	CBT	6.51 (6.02)	2.96 (3.84)	F (1, 106) = 5.57, p = .020,	p < .001, d = 0.70
Youth	WL	6.66 (5.00)	5.19 (5.32)	η_p^2 = 0.05	p = .012, d = 0.28
S-MFQ	CBT	5.88 (4.96)	3.34 (3.78)	F (1, 107) = 4.15, p = .044,	p < .001, d = 0.56
mother	WL	6.70 (5.22)	5.79 (5.51)	η_p^2 = 0.04	p = .110, d = 0.17
S-MFQ	CBT	5.05 (4.50)	2.85 (4.03)	F (1, 104) = 3.82, p = .053,	p < .001, d = 0.52
father	WL	6.33 (4.88)	5.73 (5.92)	η_p^2 = 0.04	p = .316, d = 0.11
BYI-S	CBT	40.09 (10.77)	44.33 (9.01)	F (1, 106) = 5.13, p = .026,	p < .001, d = 0.43
Youth	WL	37.60 (10.14)	38.75 (10.86)	η_p^2 = 0.05	p = .180, d = 0.11

Note. *: positive effect sizes indicate improvement; η_p^2 = partial eta squared; CBT = cognitive behavioral therapy; WL = wait-list condition; ADIS = Anxiety Disorder Interview Schedule for DSM-IV; CSR = Clinician Severity Rating (ADIS); SCAS = Spence Children's Anxiety Scale; CALIS = Child Anxiety Life Interference Scale; CALIS-P = Child Anxiety Life Interference Scale - interference on parent life; S-MFQ = Mood and Feelings Questionnaire (short version); BYI-S = Becks Youth Inventory (self-concept subscale).

Figure 2

ADIS CSR for the Primary Diagnosis and for the Sum of All Diagnoses Across Time and Conditions



Note. Follow-up (FU) is based on all treated youths (pooled sample).

Table 3

Follow-Up Data for the Pooled Sample

	Post	3-month FU	12-month FU	Test statistics	Effect sizes*
ADIS CSR primary (n = 95)	2.43 (2.58)	1.93 (2.60)		t (94) = 2.18, p = .032	d = 0.19
ADIS CSR sum (n = 95)	5.44 (5.04)	4.37 (4.36)		t (94) = 2.57, p = .012	d = 0.23
SCAS youth (n = 63)	20.43 (13.20)	14.90 (10.78)	15.65 (12.10)	F (2, 124) = 17.72, p < .001	a: p < .001, d = 0.46 b: p < .001, d = 0.38 c: p = 1.0, d = - 0.07
SCAS mother (n = 70)	20.93 (11.53)	17.90 (12.49)	17.11 (14.93)	F (1.7, 115.4) = 5.50, p = .008	a: p = .004, d = 0.25 b: p = .021, d = 0.29 c: p = 1.0, d = 0.06
SCAS father (n = 61)	21.08 (13.68)	17.07 (10.53)	16.84 (13.46)	F (1.7, 99.7) = 7.82, p < .001	a: p < .001, d = 0.33 b: p = .012, d = 0.31 c: p = 1.0, d = 0.02
CALIS youth (n = 63)	7.86 (7.00)	4.14 (3.87)	5.71 (7.59)	F (1.6, 96.1) = 6.70, p = .004	a: p < .001, d = 0.66 b: p = .272, d = 0.29 c: p = .345, d = - 0.26
CALIS mother (n = 69)	10.30 (6.67)	8.25 (7.23)	7.59 (8.57)	F (1.5, 102.4) = 4.85, p = .017	a: p = .003, d = 0.29 b: p = .032, d = 0.35 c: p = 1.0, d = 0.08
CALIS father (n = 61)	10.13 (7.29)	8.31 (6.92)	6.80 (7.25)	F (1.7, 104.1) = 9.06, p < .001	a: p = .013, d = 0.26 b: p < .001, d = 0.46 c: p = .273, d = 0.21
CALIS-P mother (n = 69)	6.65 (5.59)	5.22 (6.08)	3.87 (5.27)	F (2, 136) = 15.39, p < .001	a: p = .008, d = 0.24 b: p < .001, d = 0.51 c: p = .022, d = 0.24
CALIS-P father (n = 61)	5.74 (5.45)	4.39 (4.76)	3.80 (4.84)	F (2, 120) = 7.23, p < .001	a: p = .032, d = 0.26 b: p = .002, d = 0.38 c: p = .751, d = 0.12
S-MFQ youth (n = 88)	2.77 (3.31)	2.57 (3.85)		t (87) = 0.69, p = .493	d = 0.06
S-MFQ mother (n = 95)	3.07 (3.82)	2.87 (4.04)		t (94) = 0.59, p = .558	d = 0.05
S-MFQ father (n = 86)	2.63 (4.27)	2.33 (3.76)		t (85) = 0.83, p = .408	d = 0.07
BYI-S youth (n = 88)	42.94 (10.07)	44.59 (10.90)		t (87) = 2.47, p = .016	d = 0.16

Note. *: positive effect sizes indicate improvement; ADIS = Anxiety Disorder Interview Schedule for DSM-IV; CSR = Clinician Severity Rating (ADIS); SCAS = Spence Children's Anxiety Scale; CALIS = Child Anxiety Life Interference Scale; CALIS-P = Child Anxiety Life Interference Scale interference on parent life; S-MFQ = Mood and Feelings Questionnaire (short version); BYI-S = Becks Youth Inventory (self-concept subscale); a = post treatment to 3- month follow-up; b = post treatment to 12-month follow-up; c = 3- to 12-month follow-up.