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Evidence-Based Practice in Child and Adolescent Mental Health



ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/uebh20>

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To cite this article: Sébastien Normand, Joanna Guiet, Virginie LeBlanc, Jennifer A. Mautone, Jason M. Fogler, Alexandre Prud'homme-Maisonneuve, Thomas J. Power & Jenelle Nissley-Tsiopinis (29 Sep 2023): An Open Trial of a Brief Engagement Program for Caregivers of Children with ADHD, Evidence-Based Practice in Child and Adolescent Mental Health, DOI: [10.1080/23794925.2023.2261442](https://doi.org/10.1080/23794925.2023.2261442)

To link to this article: <https://doi.org/10.1080/23794925.2023.2261442>



Published online: 29 Sep 2023.



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An Open Trial of a Brief Engagement Program for Caregivers of Children with ADHD

Sébastien Normand ^{a,b}, Joanna Guiet^a, Virginie LeBlanc^a, Jennifer A. Mautone ^{c,d}, Jason M. Fogler ^{e,f}, Alexandre Prud'homme-Maisonnette^a, Thomas J. Power ^{c,d,g}, and Jenelle Nissley-Tsiopinis ^c

^aDépartement de Psychoéducation et de Psychologie, Université du Québec en Outaouais, Gatineau, QC, Canada; ^bInstitut du Savoir Montfort, Hôpital Montfort, Ottawa, ON, Canada; ^cDepartment of Child and Adolescent Psychiatry and Behavioral Sciences, Children's Hospital of Philadelphia, Philadelphia, Pennsylvania, USA; ^dDepartment of Psychiatry, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, USA; ^eDivision of Developmental Medicine, Boston Children's Hospital, Boston, Massachusetts, USA; ^fDepartments of Pediatrics & Psychiatry, Harvard Medical School, Boston, Massachusetts, USA; ^gDepartment of Pediatrics, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania, USA

ABSTRACT

This open trial evaluated the feasibility, acceptability, and preliminary efficacy of Bootcamp for ADHD (BC-ADHD), a novel, four-session, group intervention designed to prepare caregivers as informed consumers to engage in multimodal evidence-based treatments (EBTs) for ADHD. Participants were 59 primary caregivers (85% biologic mothers) of children recently diagnosed with ADHD within a co-located, subspecialty pediatric clinic (ages 5–11; 73% male). Results indicated BC-ADHD was feasible to deliver, as evidenced by high levels of program usability (i.e. content and process fidelity), and caregiver behavioral engagement (M attendance = 88%; M homework adherence = 2.95 homework, $SD = 1.15$, 0–4 range). Families were also very satisfied ($M = 6.06$, 1–7 range). At post-treatment, BC-ADHD resulted in increases in caregiver empowerment and acceptability of behavioral treatment and reductions in concerns about both behavioral (adverse effects and feasibility) and medication (adverse effects) treatments (absolute Cohen's $d = 0.27$ to 0.35). At 6-month follow-up, effects were sustained for increases in caregiver empowerment and for reductions in concerns about both behavioral and medication treatments (absolute $ds = 0.36$ to 0.40). Sleeper effects were observed for increased medication acceptability and decreased affiliate stigma (absolute $ds = 0.26$ to 0.29). Child impairment was also reduced at follow-up ($d = -0.58$). The percentage of caregivers who initiated behavior therapy (Kendall's $w = 0.63$) or medication (Kendall's $w = 0.15$) increased from baseline to 6-month follow-up. These findings provide initial support for BC-ADHD as a promising engagement program to foster positive caregiver attitudes and initiation of EBTs.

Evidence-based treatment options for attention-deficit/hyperactivity disorder (ADHD) in childhood include behavioral and pharmacological treatments (Wolraich et al., 2019). Unfortunately, epidemiological studies show that ADHD is often undertreated (Danielson et al., 2018; DuPaul et al., 2019). Because ADHD is typically first identified in childhood, caregivers are responsible for initiating and facilitating the process of help-seeking. Given that ADHD is heritable (Faraone et al., 2005), parents of children with ADHD often have symptoms of the disorder, which likely has an impact on parenting and adherence to treatment (e.g., following through with recommendations, arriving late to treatment; Chronis-Tuscano et al., 2017).

Additionally, obtaining evidence-based treatment is often challenging for caregivers of children with ADHD due to barriers in the process of seeking and receiving services. Eiraldi et al. (2006) suggested different types of barriers caregivers encounter, including those related to public health policy, health care administration, and direct service (see Nissley-Tsiopinis et al., 2023). The utility of a pathway model of help-seeking behavior is contingent on the malleability of its components. Direct service-level barriers are especially malleable; these may include caregiver empowerment in accessing needed services for one's child (Resendez et al., 2000), caregivers' perceived stigma (i.e., affiliate stigma; Mikami et al., 2015), and

treatment preferences (Fiks et al., 2013). Effective, personalized treatments for families of children with ADHD must account for barriers to care to promote readiness, willingness, and ability to initiate and engage in long-term evidence-based treatment for ADHD (Dishion & Stormshak, 2007).

The need for caregiver engagement interventions

Developing programs to promote family engagement in evidence-based treatment for ADHD has been identified as a research priority, according to the most recent guidelines for assessing and treating ADHD (Wolraich et al., 2019). Several programs have been developed to improve engagement among parents who have already decided to initiate behavioral parent training (BPT; Chacko et al., 2009, 2015; Nock & Kazdin, 2005; Sibley et al., 2016). Although these programs aim to increase session attendance, active participation in sessions, and completion of between-session homework, they do not address the fundamental problem that families often do not initiate evidence-based treatments. Further, to our knowledge, engagement efforts generally have not focused on promoting family involvement in comprehensive, *multimodal* care (i.e., care including services from school, health, and mental health providers).

Building on these previous engagement approaches, Bootcamp for ADHD (BC-ADHD) is a brief engagement program for families in the early stages of coping with their child's ADHD diagnosis. It is designed to prepare caregivers as informed consumers of multimodal, evidence-based care for ADHD and address direct service-level barriers to initiating and engaging in treatment, such as caregiver empowerment in accessing needed services for one's child, affiliate stigma, and treatment preferences (Nissley-Tsiopinis et al., 2023). BC-ADHD is commonly administered to groups of 5–8 families and targets caregivers of 5- to 11-year-old children with a relatively new diagnosis of ADHD (Nissley-Tsiopinis et al., 2023). Similar to psychoeducation interventions, BC-ADHD includes psychoeducation describing the symptoms and presentations of ADHD, its functional impairments and co-occurring conditions, as well as EBTs for the disorder (Dahl et al., 2020; Ferrin et al., 2020). Similar to BPT programs, BC-

ADHD includes education in positive parenting practices in an effort to encourage caregiver empowerment, familiarity with BPT, and likelihood of pursuing BPT in the future. Also, like BPT programs, BC-ADHD encourages content learning through psychoeducational discussion and experiential learning through between-session homework exercises. However, BC-ADHD differs from typical psychoeducation and standard BPT by: (a) emphasizing the use of motivational interviewing techniques to promote caregiver autonomy in generating solutions consistent with their goals and values, support caregiver movement through the stages of change, and help caregivers process and address barriers to initiating treatment such as concerns about the stigma of the diagnosis and concerns about specific treatments; (b) supporting caregivers' organization, time-management, and planning skills needed to follow through on the steps needed to engage in treatment by addressing barriers to implementation of between-session homework assignments and developing a personalized treatment plan for their child; and (c) using group therapy techniques to connect caregivers with one another in deciding next steps regarding their child's treatment. See Nissley-Tsiopinis et al. (2023) for more details about the theory of change behind BC-ADHD. A proof-of-concept study (Nissley-Tsiopinis et al., 2023) conducted with eleven ($n = 11$) families suggested that BC-ADHD may (a) be feasible and acceptable and (b) potentially increase family empowerment, ratings of behavior therapy acceptability, and intention to use behavior therapy, school services, and medication.

The current study

To further examine intervention acceptability, feasibility, and potential efficacy, a test of BC-ADHD was conducted at a different site in another country using a different service delivery system with a much larger sample ($n = 59$ instead of 11). In addition, the potential for the effects of BC-ADHD to be maintained was examined by evaluating follow-up effects after a longer follow-up period (i.e., 6 months vs. 6 weeks). The current study was an open trial using a non-randomized, within-subjects design to examine effects at post-treatment and 6-month follow-up.

Three research questions and three related a priori hypotheses were examined: Research question 1. Is BC-ADHD feasible for clinicians and caregivers of children with ADHD when delivered in a co-located, subspecialty pediatric clinic serving families? Hypothesis 1. Indicators of program usability (i.e., content and process fidelity) and caregiver behavioral engagement (i.e., attendance and homework adherence) were expected to provide evidence of treatment feasibility. Research question 2. Is BC-ADHD acceptable to caregivers? Hypothesis 2. Post-treatment caregiver satisfaction scores and qualitative feedback were expected to provide evidence of treatment acceptability. Research Question 3. Does BC-ADHD have an effect on theoretically-driven proximal and distal outcomes (i.e., initiation of evidence-based treatments for ADHD, child impairment) at post-treatment and 6 months following program completion? Hypothesis 3. It was expected that caregivers receiving BC-ADHD would report improved theoretically-driven proximal and distal outcomes at post-treatment and at follow-up.

Method

Participants

Participants were 59 primary caregivers of children with ADHD (72.9% male; age 5–11). Caregivers were 84.7% biologic mothers, 8.5% biologic fathers, 3.4% legal guardians, 1.7% step-fathers, and 1.7% adoptive mothers; 67.8% were French-speaking and 32.2% were English-speaking. By their report, fifty (84.7%) lived in two-caregiver households; three (5.1%) were separated and involved in coparenting in a two-caregiver household; and six (10.2%) were single parents. Families were recruited during 12 months (September 2018–2019) through a Southern Canadian hospital-based, co-located subspecialty pediatric clinic. As part of a francophone academic hospital, this pediatric clinic provides primary care for patients with complex needs and secondary-care consultation services to family physicians for children from birth to age 16. The team consists of six developmental and behavioral pediatricians, one registered nurse, one registered practical nurse,

one pediatric psychologist (0.2 FTE), and one or two doctoral students in clinical psychology. Follow-up assessments were completed in March 2020. See Table 1 for participant demographic and clinical characteristics at baseline. Because groups were run in both French and English, baseline comparisons were done between the two groups of families, which showed no significant differences between French- ($n = 40$) and English-speaking ($n = 19$) participants in these demographic and clinical characteristics.

Procedure

Figure S1 displays the CONSORT diagram. Caregivers gave free and informed consent to participate. Potentially interested caregivers were informed that the BC-ADHD program was designed as a pre-treatment program to (a) help caregivers become empowered in the shared decision-making process in treating ADHD (i.e., jointly participate in decisions, exchange information and preferences, and decide on a treatment plan; Charles et al., 1997), (b) get support from other caregivers who are in the same situation as them, and (c) know how to access available treatment options. Caregivers were also informed that the study purpose was to evaluate whether the program was feasible, acceptable, and potentially useful. As per caregivers' preferences, the procedures were conducted in English or French and were approved by institutional review boards of [masked for review] institution. The translation of the study measures into French was conducted by an advanced bilingual doctoral student in clinical psychology. The measures were subsequently back-translated and compared with the original by a study investigator, who is also a bilingual licensed clinical psychologist, to check that the translated versions reflected the same item content as the original (see Beaton et al., 2000). The Transparent Reporting of Evaluations with Non-randomized Designs (TREND) guidelines (Des Jarlais et al., 2004) were followed.

Determination of study eligibility

Children aged 5–11 who had received a diagnosis of ADHD, rendered by pediatricians

and based in part on caregiver and teacher rating scales, within two years of initial screening were eligible to participate in the study. The presence of comorbidities was determined by phone screening with caregivers. Most children with co-existing conditions were included but children with the following conditions were excluded: intellectual disability, autism spectrum disorder, psychosis, active suicidal or homicidal ideation and/or behavior, and/or self-harm behaviors at the time of the initial screening. For this pilot study, families of children who were receiving medication or behavior therapy for ADHD were permitted to enroll in the study (see Table 1).

Assessment procedures

Eligible caregivers completed a developmental history form and clinical measures (e.g., ratings of ADHD symptomatology) at baseline. They also completed proximal outcome measures at baseline, post-treatment, and follow-up (which occurred 6 months after post-treatment) and distal outcome measures at baseline and follow-up. These self-report questionnaires were completed by phone, fax, mailing, or in person. Trained graduate or undergraduate students administered the service-level outcome measure (i.e., the Receipt of Evidence-Based Treatment for ADHD interview) over the phone or in person at baseline and follow-up. Finally, caregivers also provided their written

Table 1. Participant demographic and clinical characteristics at baseline.

Child sex (% male)	72.9	
Child age, in years, <i>M</i> (<i>SD</i>)	8.31 (1.65)	
Child ethnicity (%)		
European Canadian/White	84.7	
Multiracial	11.9	
Asian Canadian	1.7	
African Canadian/Black	1.7	
Child primary language (%)		
French	67.8	
English	25.4	
Bilingual (French and English)	6.8	
Child ADHD symptom count		
Inattention, <i>M</i> (<i>SD</i>)	6.32 (2.10)	
Hyperactivity, <i>M</i> (<i>SD</i>)	5.25 (2.57)	
Current ADHD medication (%)	59.3	
Current behavior therapy (%)	5.1	
Comorbid learning disorder (%)	25.4	
Comorbid oppositional defiant disorder (%)	11.9	
Comorbid anxiety disorder (%)	6.8	
Child impairment: (%)		
Relationship with peers	72.9	
Relationship with siblings	76.6	
Relationship with parents	89.8	
Academic progress	84.7	
Self-esteem	78.0	
Family functioning	86.4	
Overall impairment and need for treatment	96.6	
	Primary Caregiver (<i>n</i> = 59)	Other Caregiver (<i>n</i> = 23)
Caregiver sex (% female)	89.8	10.2
Caregiver age, in years, <i>M</i> (<i>SD</i>)	39.50 (6.56)	41.21 (6.65)
Caregiver education level (%)		
High school graduate or less	10.2	13.6
Some college/university or post-high school	1.7	8.5
College or technical degree graduate	32.2	27.1
University graduate	40.7	27.1
Advanced post-university degree (e.g., MD, MA, PhD)	15.3	10.2
Caregiver employment status (% working full time)	83.1	79.7
Family income (CAD annual), <i>M</i> (<i>SD</i>)	114,321 (41,828)	
Family status (% two-caregiver household)		89.8

n = 59. CAD = Canadian Dollars.

^aA child was considered impaired if receiving a score ≥ 3 on a subscale (Fabiano et al., 2006).

There were no significant differences between participants with or without data at post-treatment or follow-up in virtually all of the 33 variables in the table. However, participants without follow-up data (*n* = 5) were more likely to live in single-parent households than participants with follow-up data (*n* = 54).

weekly satisfaction, overall program evaluation, and qualitative feedback about their experience after each session and at post-treatment. Caregivers received \$20 CAD each time they completed the study measures at baseline, post-treatment, and follow-up.

Program description

BC-ADHD is grounded in several complementary theoretical models: the help-seeking model for ADHD (Eiraldi et al., 2006); Transtheoretical Model (Prochaska & Norcross, 2002); and Self-Determination Theory (Ryan & Deci, 2018; see Nissley-Tsiopinis et al., 2023 for more information about theoretical foundation and theory of change for BC-ADHD). The program consists of four, 90-min caregiver group sessions that meet once weekly, with 5 to 8 families. Session 1 focuses on helping caregivers understand the ADHD diagnosis, its developmental course, evidence-based treatment, and addressing concerns parents have about accepting the diagnosis. Session 2 focuses on helping caregivers understand and connect with each other about the challenges ADHD can bring to home life, introduces behavioral parent training with an emphasis on positive reinforcement, and addresses concerns parents have about initiating behavioral parent training. Session 3 focuses on helping caregivers to understand the neurodevelopmental basis of ADHD and factors to consider in deciding about the use of medication and to process their questions and concerns about initiating medication as a treatment for their child. Finally, session 4 focuses on the impact of ADHD at school, how caregivers can build collaborative partnerships with teachers to increase their child's success at school and addresses concerns parents have about initiating school-based services. Caregivers receive homework assignments to complete between sessions, which are designed to address implementation barriers, while also introducing caregivers to evidence-based treatments so they can make an informed decision about initiating follow-up care and supporting development of a care plan (see Method, caregiver behavioral engagement section for details about homework assignments, and Nissley-Tsiopinis et al., 2023 for details about program content).

Nine BC-ADHD groups were conducted, six in French and three in English, each of which included 5–8 families. Groups were conducted within a private meeting room at the hospital and were co-led by a licensed clinical psychologist and a graduate student in clinical psychology. Both the clinical psychologist and graduate student were bilingual (French and English) and met for 1 hour each week for supervision. The program was delivered at no cost, and families were not paid for participating in sessions. Sessions were scheduled at times convenient for families after polling them for their preferences (e.g., evenings, weekends, lunch time), and free childcare, parking, and individual make-up sessions (i.e., 45-minute in-person review of session content for the group session not attended) were provided. Five (8.5%) families received individual make-up sessions: one family received two, and four families received one. The caregiver who enrolled in the study was encouraged to attend all sessions and complete all measures, but additional caregivers could attend if desired. Additional caregivers attended at least one group session for 23 of the 59 families (39.0%). Five (8.5%) families used the childcare services offered by the study. No adverse events were reported during the course of the study.

Measures

Descriptive measures of demographic and clinical characteristics

Caregivers completed a brief interview, a demographic form, and the Swanson, Nolan and Pelham questionnaire (SNAP; Swanson, 1995) to assess child ADHD symptoms.

Program feasibility

Program usability (fidelity)

After each group session, both clinicians independently completed content fidelity checklists. The content fidelity checklist included 13 or 14 items per session, rated as 0 (not implemented) or 1 (implemented). The mean score of all content items (ranging from 0 to 1) coded by the primary coder was used. After each session, clinicians also assessed process fidelity items, separately for the first and second half of each group session, on a scale from 1 (not

implemented) to 4 (fully implemented). These five process fidelity items were: (a) encouraging caregiver active engagement (e.g., using open-ended questions; adapting material to individual caregiver situations); (b) eliciting and strengthening change talk (e.g., using motivational interviewing to affirm the desire, ability, and need for change); (c) providing emotional validation (e.g., providing social support, validating caregivers' feelings); (d) building connections among caregivers (empowering them through their shared experiences); and (e) keeping caregivers focused on foundational principles and evidence-based practices (e.g., avoiding off-topic discussions about care contra-indicated by BC-ADHD). Using a procedure similar to Harter (1985), clinicians were asked to choose one of two descriptions showing low vs. high levels of each group process item and then rate whether this description was “sort of true” or “really true” (see Nissley-Tsiopinis et al., 2023). The average scores of the five process dimensions (ranging from 1 to 4) coded by the primary coder were used in analyses. Independent ratings by the second clinician of all cases were collected to calculate interrater reliability for both content and process fidelity (overall content fidelity; $\kappa = .85$; process fidelity for the five items, ICCs = .74–.80).

Caregiver behavioral engagement

The study coordinator recorded family attendance for each session and whether caregivers attended a make-up session. After each BC-ADHD session, the study coordinator photocopied the first four completed homework assignment sheets. Because homework 5 was assigned at the end of session 4, this homework was not collected in the current pilot study. The homework assignments were: Homework 1 (given at the end of session 1): Track positive, negative, and neutral statements parents make during parent – child interactions; homework 2 (given at the end of session 2): Use “catch them being good” to reinforce a specific behavior; homework 3 (given at the end of session 3): Use strategic ignoring to extinguish a specific behavior; homework 4 (also given at the end of session 3): develop an evidence-based care plan (i.e., consider behavioral parent training and medication); and homework 5 (given at the end of session 4): update the care plan for school services. A research assistant independently rated the extent to which each of the first four homework worksheets was

completed and calculated the total of these ratings, using adapted homework adherence scoring procedures (Clarke et al., 2015). Each of these four assignments was rated using a 2-point scale (0 = not submitted, 1 = submitted). Independent rating of the assignments by a second research assistant of 25% of randomly selected cases indicated excellent interrater reliability ($\kappa = .92$).

Program acceptability

Caregiver satisfaction

Caregivers evaluated their satisfaction with the whole program and the helpfulness of each of the four sessions and five program components (i.e., organization of sessions, information provided, opportunity to share with other families, session handouts, and between-session homework assignments) on a program evaluation form at post-treatment. Each item was rated on a 7-point Likert scale (1= “Not helpful;” 4= “Helpful;” 7= “Extremely helpful”). Mean satisfaction scores for each session and program aspect were reported.

Qualitative feedback

At post-treatment, caregivers provided open-ended written answers to 2 questions about their experience of BC-ADHD: (a) *What aspects of the program have been the most helpful to you?* (b) *What suggestions do you have that may be helpful for future groups?* Caregivers could list as many responses to each question as they wanted within the available space. Final qualitative feedback themes were included if they were endorsed by at least 5% of caregivers. Using the thematic analysis approach outlined by Braun and Clarke (2006), two independent coders reviewed caregivers' answers to create themes that were meaningful and mutually exclusive. After the themes were constructed, coders independently assigned each response to the appropriate theme. Reliability was excellent (all kappas $\geq .86$).

Preliminary efficacy of program

Table S1 provides information about the descriptive statistics, intercorrelations, and internal consistency for the outcome variables examined in this investigation.

Proximal outcome measures

Caregiver empowerment regarding child services

The Children's Service System subscale (12 items) of the Family Empowerment Scale (FES; Koren et al., 1992) was used to assess caregiver empowerment to access and work effectively with systems of care for children. Each item is rated on a five-point scale (1 = *not at all true*; 3 = *somewhat true*; 5 = *very true*). The mean item score was used as the index of caregiver empowerment with higher scores being more favorable. Reliability and validity of the FES have been established (Cronbach's $\alpha = .78-.89$; see Koren et al., 1992; Resendez et al., 2000).

Affiliate stigma

We used an adapted version of the Affiliate Stigma Scale (ASS) specific to ADHD (12 items; Mikami et al., 2015's adaptation of Mak & Cheung, 2008) to assess caregiver sense of being stigmatized and isolated due to child ADHD. Responses ranged from 1 to 4 (1 = *not at all*; 4 = *very much*). The mean item score was used as an indicator of the overall level of concern about the stigma associated with ADHD (Mikami et al., 2015). The ASS's internal consistency, predictive validity, and concurrent validity have been shown to be strong (e.g., Cronbach's $\alpha = .83$; see Mikami et al., 2015).

Caregivers' treatment preferences

We used the preferences subscales of the ADHD Preference and Goal Instrument to assess caregivers' preferences for medication (16 items) and behavior therapy (14 items). The scale domains include subscales related to acceptability, feasibility concerns, adverse effects for both treatments (e.g., concerns about the child's reaction to treatment), and stigma for medication. Each item was rated on a 5-point scale to indicate respondents' degree of agreement with statements about preferences (0 = *not at all*; 2 = *somewhat*; 4 = *completely*). Mean item scores were computed for each subscale. Higher scores on the acceptability subscale are more favorable, and higher ratings of feasibility concerns, adverse effects, and stigma are less favorable. The measure has adequate internal consistency, test-

retest reliability, construct and concurrent validity (e.g., Cronbach's $\alpha = .74-.87$; see Fiks et al., 2012).

Distal outcome measures

Receipt of evidence-based treatment for ADHD

Caregivers were interviewed about their child's treatment history (type of treatment, duration, service location, number of sessions attended; Fiks et al., 2013).

Child impairment

Caregivers completed the Impairment Rating Scale (IRS; Fabiano et al., 2006) to assess daily functioning across a range of domains. Each item was rated on a 7-point scale (0 = *no problem*; 6 = *extreme problem*). A mean item score was calculated to represent global impairment. The IRS exhibits good concurrent, convergent, and discriminant validity, temporal stability, treatment sensitivity, and interrater reliability (e.g., the correlation between the average score on the parent and teacher IRS, $r = .64-.81$; see Fabiano et al., 2006).

Statistical analyses

Program feasibility (Hypothesis 1)

The mean and standard deviations of total content and each of the five process items were calculated for each session and overall across sessions. The percentage of sessions attended, make-up sessions attended, and homework submitted were calculated.

Program acceptability (Hypothesis 2)

The mean and standard deviations of post-treatment caregiver satisfaction scores were computed by program session and component. Qualitative coding responses indicating primary caregivers endorsing positive qualitative was an additional indicator of program acceptability.

Preliminary efficacy of program (Hypothesis 3)

The amount of missing data was very low: Proximal and distal outcome data were complete for all eligible participants at baseline and post-treatment; 3.7% had missing proximal and distal outcome data at follow-up. Listwise deletion was

used to address missing data. Prior to conducting statistical testing, the distributions of each outcome measure were examined to determine whether assumptions of normality were met and whether significant data outliers were present. The distributions of the outcome measures met assumptions of normality.

To test immediate intervention effects, we conducted a series of repeated-measures analyses of variance (ANOVA) using the Statistical Package for the Social Sciences (SPSS), version 28.0 (SPSS Inc, Chicago, IL). The within-subject variable of Time reflected changes in individual scores from baseline to post-treatment. These analyses were conducted separately for the proximal and distal outcome measures. Given the preliminary nature of this open trial, no adjustments were made for multiple comparisons (Perneger, 1998).

To test sustained and sleeper intervention effects, we conducted a separate series of repeated-measures ANOVAs with the within-subject variable of Time reflecting changes from baseline to follow-up. These analyses were conducted separately for the proximal and distal outcome measures. Again, no adjustments were made for multiple comparisons.

To estimate potential treatment effects, effect sizes were calculated to determine the change from baseline to post-treatment (for proximal outcome variables), and from baseline to follow-up (for all outcome variables). Cohen's d was calculated for continuous variables by subtracting the baseline mean from the post-treatment mean (immediate effects) or follow-up mean (sleeper effects) and dividing by the baseline standard deviation (Fabiano et al., 2011). Kendall's w was used to estimate effect sizes for categorical variables (i.e., Receipt of evidence-based treatment for ADHD). Conventions for d are 0.2 = small, 0.5 = medium, and 0.8 = large; conventions for Kendall's w are 0.1 = small, 0.3 = medium, and 0.5 = large (Cohen, 1988).

Sensitivity analyses

Because evidence of ceiling and floor effects was found on some outcome measures in a prior proof-of-concept study (see Nissley-Tsiopinis et al., 2023), follow-up analyses were conducted to examine ceiling/floor effects in the current study. To accomplish this, we identified the outcome variables with at least 10%

of participants having “perfect” scores at baseline (e.g., those without any concern at baseline or with an average score of 0 on the ADHD PGI subscales), and we re-ran the analyses on each outcome without these participants.

Results

Program feasibility (Hypothesis 1)

Overall content fidelity was excellent ($M = 0.96$, $SD = 0.19$; possible range = 0–1). Process fidelity scores were also high across the five process items: (a) encouraging caregiver active engagement ($M = 3.86$, $SD = 0.35$; possible range = 1–4); (b) eliciting and strengthening change talk ($M = 3.76$, $SD = 0.43$); providing emotional validation ($M = 3.90$, $SD = 0.30$); (d) building connections among caregivers ($M = 3.75$, $SD = 0.44$); and (e) keeping caregivers focused on foundational principles and evidence-based practices ($M = 3.97$, $SD = 0.17$).

Primary caregivers' attendance was very high across all four BC-ADHD sessions ($M = 94.9\%$; range = 91.5% – 96.6%). The majority (86.4%) of primary caregivers attended all sessions, 6.8% attended three sessions, and 6.8% attended two sessions. Make-up sessions were completed for 50% of all missed sessions ($n = 6/12$). Among the 53 two-caregiver households, 43.4% had both caregivers attend at least one session.

Overall, primary caregivers submitted an average of 2.95 homework forms ($SD = 1.15$; 0–4 range). Specifically, 89.5% of caregivers submitted homework after session 1 (i.e., Tracking Time with your child), 89.3% of caregivers submitted homework after session 2 (i.e., Catch Them Being Good), and 81.0% of caregivers submitted at least one of two homework assignments after Session 3: 62.1% (i.e., Strategic Ignoring) and 63.6% (i.e., Care Plan for Behavioral Parent Training and Medication), respectively.

Program acceptability (Hypothesis 2)

Overall satisfaction with the program was high, $M = 6.06$ ($SD = 0.82$; range 5.85–6.18; maximum possible score of 7 [extremely helpful]). Satisfaction across the program components ranged from 6.08 to 6.55 (See Table S2). As another indicator of

program acceptability, 95% (56/59) of families completed the BC-ADHD program and missing data were minimal, suggesting caregivers were able to comply with the data collection methods. Primary caregivers also provided a range of responses to open-ended program satisfaction and evaluation questions. The thematic analysis of responses by primary caregivers indicated that obtaining useful information (86%), connecting with other caregivers (64%), and learning behavioral techniques (38%) were the most important strengths of BC-ADHD. The most frequently offered suggestions for program improvement were increasing the dose of intervention (55%), better managing the balance of information vs. discussion time (53%), and getting more practical behavioral strategies (17%). See Table 2 for further details regarding the qualitative analysis of caregiver feedback.

Preliminary efficacy of program (Hypothesis 3)

Changes in proximal outcomes

The findings demonstrated immediate and sustained treatment effects in terms of increased caregiver empowerment in accessing and working with

systems of care for children. The magnitude of these effects was in the small-to-medium range. Although there was no immediate effect in terms of reduced affiliate stigma after BC-ADHD, we found a small-to-medium sleeper treatment effect at follow-up (see Table 3).

We found immediate and sustained effects at follow-up in terms of reduced concerns about adverse effects related to behavior therapy. There were also immediate treatment effects in terms of increased acceptability for and reduced feasibility concerns about behavior therapy at post-treatment (small-to-medium ESs); these effects were not sustained (Table 3).

Similarly, there were immediate and sustained treatment effects related to reducing concerns about adverse effects for medication, and a sleeper treatment effect (significant at follow-up but not post-treatment) in increased medication acceptability (small-to-medium ESs). There was no treatment effect of BC-ADHD on caregivers' concerns regarding medication feasibility or stigma (see Table 3).

Changes in distal outcomes

We found treatment effects for increased utilization of behavioral treatment and medication

Table 2. Open-ended, qualitative evaluation of BC-ADHD: percentage of primary caregivers endorsing themes.

Categories (Kappas) and themes	Primary caregiver (%)	Example quotes
What aspects of the program have been the most helpful to you? ($\kappa = .86$)		
Obtaining useful information	86	• Gave me lots of info on ADHD I didn't know.
Connecting with other caregivers	64	• We are not alone. Other parents gave me suggestions.
Learning behavioral techniques	38	• I learned techniques to improve my relationship with my child.
Better understanding medications	33	• Very comforting in helping understand medications.
Collaborative health professionals	28	• Dynamic, listening, well informed, and non-judgmental professionals.
Reduction of caregiver stigma	24	• It was nice to know that it's not my fault.
Learning school interventions	22	• I learned good ideas for fostering a better parent-teacher relationship.
Feeling empowered and hopeful	21	• I feel better equipped for dealing with my child's diagnosis and what role I can play for him to increase his chances of success.
Homework assignments	21	• The homework exercises were easy to follow and of "high impact;" they made me want to learn more about behavior therapy.
Facilitating access to services	17	• Access to further available resources.
What suggestions do you have for us that may be helpful for future groups? ($\kappa = .90$)		
Increase dose of intervention	55	• All sessions have been helpful but I always felt more time is needed. Perhaps sessions need to be longer or more classes.
Better manage the balance of information vs. discussions	53	• There was too much information/discussions and not enough time for discussions/information.
Get more behavioral strategies	17	• I was expecting more behavioral strategies.
Better personalize the program	10	• There should be a session individualized to the child's needs.
Better facilitate access to services	9	• Provide a list of community services that we can have access after diagnosis, where to start and what to do in the next 30-60-90 days.
Foster more caregiver-to-caregiver support	7	• Inform parents they can share e-mails or create a Facebook group, if they want, to keep building the "community between parents."
Clearer homework guidelines	5	• I don't know what particular behavior to target.
Get access to the program sooner	5	• It would be more useful for parents whose child was just diagnosed.

$n = 58$. One caregiver did not provide qualitative feedback.

^aA follow-up analysis revealed that 71.0% of these parents wanted more discussion time, whereas 29.0% wanted more information.

treatment 6 months after BC-ADHD. Whereas 20.3% of families reported lifetime use of behavioral treatment at baseline, 85.2% reported this at follow-up (representing a 64.9% increase in behavioral treatment use over 6 months when directly offered in clinic; large ES; Table 3 and Figure 1). Among families who initiated behavioral treatment by follow-up, 73.9% completed group behavioral parent training (excluding BC-ADHD), 13.0% initiated individualized family behavior therapy, 10.9% initiated group behavioral peer

intervention (i.e., Parental Friendship Coaching; Mikami & Normand, 2022), and 2.2% initiated both group behavioral parent training and group behavioral peer intervention. Thirty-four participating families (73.9%) initiated behavioral treatments after completing BC-ADHD (within the last 6 months), all of whom initiated this treatment within our co-located, subspecialty pediatric clinic.

Regarding medication, whereas 64.4% of families reported a child's lifetime use of medication to treat ADHD at baseline, 81.5% reported this

Table 3. Outcomes at post-treatment and follow-up.

Domain and measure	Baseline		Post		Follow-up		Baseline to Post		Baseline to Follow-up	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p</i>	<i>ES</i>	<i>p</i>	<i>ES</i>
Proximal outcomes										
Caregiver empowerment (FES)	3.94	0.62	4.11	0.56	4.17	0.49	*	0.27	**	0.36
Affiliate stigma (ASS)	2.06	0.64	1.98	0.62	1.87	0.57	ns	-0.13	*	-0.29
Treatment preferences (APGI)										
BT acceptability	3.20	0.52	3.38	0.51	3.27	0.62	**	0.34	ns	0.12
BT feasibility concerns	1.82	0.97	1.48	0.94	1.64	0.95	**	-0.35	ns	-0.19
BT adverse effects	1.03	0.76	0.79	0.79	0.73	0.56	**	-0.31	*	-0.39
MT acceptability	2.85	0.83	2.95	0.80	3.07	0.80	ns	0.13	*	0.26
MT feasibility concerns	0.97	0.91	0.83	0.86	0.85	0.90	ns	-0.15	ns	-0.13
MT adverse effects	1.98	1.09	1.63	1.03	1.55	1.04	**	-0.32	**	-0.40
MT stigma	0.95	0.97	0.97	0.85	0.82	0.82	ns	0.02	ns	-0.13
Distal outcomes										
BT lifetime use (RETA, %)	20.3	—	—	—	85.2	—	—	—	***	0.63
MT lifetime use (RETA, %)	64.4	—	—	—	81.5	—	—	—	**	0.15
Child impairment (IRS)	3.93	0.83	—	—	3.45	1.03	—	—	***	-0.58

Primary caregivers at baseline ($n = 59$), post-treatment ($n = 56$), and follow-up ($n = 54$). APGI = ADHD Preference and Goal Instrument; ASS = Affiliate Stigma Scale; BT = Behavioral Treatment; FES = Family Empowerment Scale – Child Services; IRS = Impairment Rating Scale; MT = Medication Treatment; ns = not significant; RETA = Receipt of Evidence-based Treatment for ADHD. Higher scores for BT and MT feasibility concerns, BT and MT adverse effects, MT stigma, Affiliate stigma, and Child impairment indicate greater levels of concern. Higher scores for FES, BT and MT acceptability, and BT and MT lifetime use reflect more favorable ratings. ES (effect size) type: Cohen's d were calculated for continuous variables by subtracting the baseline mean from the Post or Follow-up mean and dividing by the baseline standard deviation. Kendall's w was used to estimate effect sizes for categorical (RETA) variables. Conventions for d are 0.2 = small, 0.5 = medium, and 0.8 = large; whereas conventions for Kendall's w are 0.1 = small, 0.3 = medium, and 0.5 = large (Cohen, 1988).

$p < .05$; $p < .01$; $p < .001$.

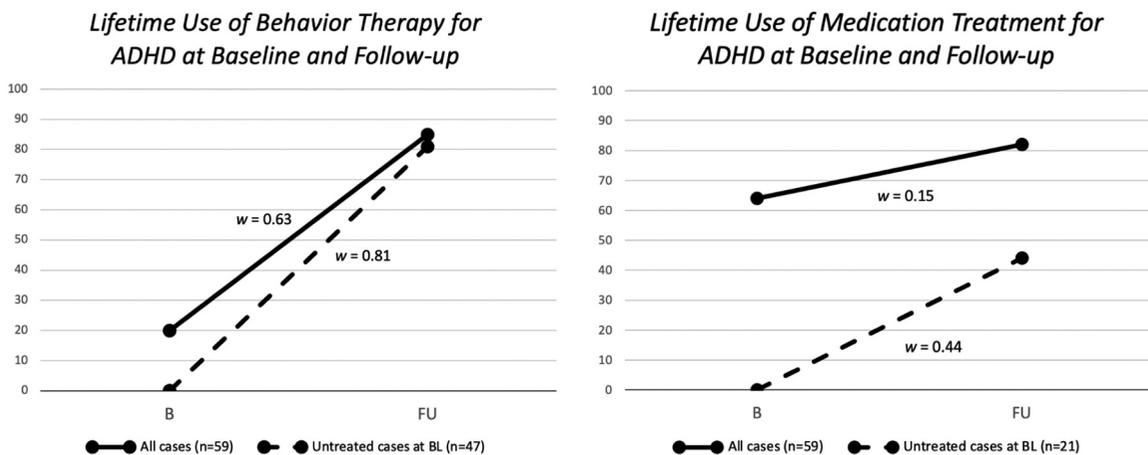


Figure 1. Lifetime use of Evidence-based Treatment for ADHD with adjustments for ceiling effects. BL = Baseline, $N = 59$; FU = Six-month follow-up, $N = 54$. These graphs show the lifetime use of behavior therapy and medication at each timepoint for all evaluable cases (bold line) and the subgroup with participants who scored at the ceiling at baseline (i.e., who were already treated at baseline) removed (dashed line). Kendall's w was used to estimate effect sizes. Conventions for Kendall's w are 0.1 = small, 0.3 = medium, and 0.5 = large (Cohen, 1988).

at follow-up (an increase of 17.1% in medication utilization over 6 months; small ES; see [Table 3](#) and [Figure 1](#)). Among families who had initiated medication by follow-up, all had tried one or more stimulant medications, and 11.3% had tried a non-stimulant in addition to at least one stimulant. As indicated in [Table 3](#), we also found a treatment effect in reduced child impairment at follow-up (medium-to-large ES).

Sensitivity analyses

Follow-up analyses examining potential ceiling/floor effects revealed four outcome variables with at least 10% of participants having “perfect” scores at baseline (e.g., no potential for improvement): medication-related feasibility concerns ($n = 15$, 25.4%) and stigma ($n = 18$, 30.5%) and lifetime use of behavior therapy ($n = 12$, 20.3%), and medication treatment ($n = 38$, 64.4%). Re-running analyses excluding participants with perfect scores revealed floor effects for feasibility concerns regarding medication at post-treatment and medication-related stigma at follow-up; both showed a small-to-medium treatment effect (both Cohen’s $d_s = -0.36$). For Receipt of Evidence-Based Treatment, excluding participants with a previous history of behavior therapy sustained the large effect found with the full sample (all cases: Kendall’s $w = 0.63$; cases previously untreated: Kendall’s $w = 0.81$). Excluding participants with prior medication treatment at baseline increased the effect size from small-to-medium to medium-to-large (all cases: Kendall’s $w = 0.15$; cases previously untreated: Kendall’s $w = 0.44$). See [Figure 1](#).

Discussion

Obtaining evidence-based treatment is often challenging for caregivers of children with ADHD due to barriers to seeking and receiving services, including caregiver concerns regarding diagnosis and treatments (Eiraldi et al., 2006) and their sense of empowerment in seeking services for their child (Resendez et al., 2000). Following the report of the initial proof-of-concept (Nissley-Tsiopinis et al., 2023), this pilot study examined the feasibility, acceptability, and potential efficacy of BC-ADHD with a substantially larger sample at a site different from the original developers. The

current pilot study also complements the initial proof-of-concept with a longer follow-up period (i.e., 6 months), the thematic approach used to analyze caregivers’ experience of BC-ADHD, and the inclusion of an outcome measure of child impairment.

Treatment fidelity and behavioral indicators of family engagement (i.e., attendance and homework adherence) provided evidence of program feasibility. Quantitative and qualitative data indicated that families were very satisfied with the program. At post-treatment, BC-ADHD resulted in increases in caregiver empowerment and acceptability of behavioral treatment and reductions in concerns about behavioral and medication treatments. At follow-up, findings provided evidence for sustained effects on caregiver empowerment and reduced concerns about using ADHD treatments. There was also evidence that BC-ADHD may be associated with increased medication acceptability, decreased affiliate stigma, and reduced child impairment at follow-up – as well as achieving its main goal of promoting family initiation of EBTs.

Program feasibility (Hypothesis 1)

There was substantial evidence of program feasibility. Clinicians delivered virtually all content fidelity items of the program during each session. Process fidelity scores were also high across the five process items, with scores equal or larger than 3.75 on a 1–4 scale. These findings are similar to those found in the proof-of-concept study (content fidelity: 100%; process fidelity $\geq 3.70/4$) and indicate that clinicians were able to deliver the intervention components and adhere to key processes of parent group intervention (see Nissley-Tsiopinis et al., 2023). This is critical because group process is considered as essential to the program as the intervention content itself. The use of a manualized intervention, the fact that the intervention was provided by the lead investigator of this study, and the intentional focus on addressing process indicators may have contributed to the high level of program fidelity.

Program feasibility was also supported by the very high caregiver behavioral engagement in the program (i.e., attendance and homework adherence). The overall attendance across all four

sessions was 95%, and the majority of primary caregivers attended all four BC-ADHD sessions, even higher than the proof-of-concept study (86%; Nissley-Tsiopinis et al., 2023). Reimbursement for parking and the availability of onsite childcare (used by 8.5% of families) may have contributed to high attendance. With regard to homework adherence, primary caregivers submitted homework for an average of 2.95 of 3 sessions. Homework completion rates were 95% for the first two sessions, when only one homework assignment was given. Although 87% of families completed at least one homework assignment for the third session, there was a lower completion rate for each of the two homework assignments given in that session (i.e., Strategic Ignoring, 62%; Individualized Plan for Care, 64%). These findings suggest it may be advisable to limit homework assignments to one per session. Caregivers have reported that factors such as finding time to do homework and coping with child misbehavior were barriers to homework implementation (Nissley-Tsiopinis et al., 2023).

Program acceptability (Hypothesis 2)

Program acceptability was supported by high retention rates (95%) and caregiver satisfaction ratings overall (i.e., average session satisfaction: 6.06/7.00) and across program components (i.e., average program component satisfaction: 6.34/7.00). Although these findings are comparable to those of the proof-of-concept study (Nissley-Tsiopinis et al., 2023), our attempts to schedule groups at a time convenient for families, and offering free childcare and parking, and individual make-up sessions may have contributed to the favorable attendance and high level of acceptability of BC-ADHD. A range of responses was elicited when caregivers were prompted to list perceived benefits of BC-ADHD, including obtaining useful information, connecting with other caregivers, and learning behavioral techniques. The perceived strengths are well-aligned with BC-ADHD's theory of change, which was designed to promote family engagement, provide psychoeducation, and prepare caregivers as informed consumers of multimodal, evidence-based care for ADHD (see Nissley-Tsiopinis et al., 2023).

When asked to suggest improvements to BC-ADHD, 55% of caregivers responded they desired a higher dose of intervention. In addition, 53% of caregivers wanted clinicians to focus more on balancing time devoted to didactic presentation vs. discussions; 71% of these caregivers wanted more discussion time, whereas 29% wanted more time spent on obtaining information. In a typical BC-ADHD session, approximately 75% of the time is devoted to discussion and 25% to presenting new content. Also, about 20% indicated they wanted more practical behavioral strategies. Despite high levels of process fidelity, it is apparent that there were differences among families with regard to their preference for discussion and opportunities to connect with other families versus learning pragmatic strategies for working with their children. Additional research is needed to examine which families would prefer and benefit from an individualized versus group version of the program.

Preliminary evidence of efficacy (Hypothesis 3)

BC-ADHD led to immediate and sustained increases in caregiver empowerment to navigate the health and educational systems, replicating and extending the results from the proof-of-concept study which used a briefer follow-up period (i.e., 6 weeks; Nissley-Tsiopinis et al., 2023). These findings suggest that BC-ADHD may be effective in achieving one of its primary goals, that is, promoting a sense of caregiver empowerment to seek and obtain needed services for their child, thereby preparing families to cope with the chronic nature of ADHD and the need for care that extends across childhood and typically adolescence (DuPaul et al., 2020; Wolraich et al., 2019).

Although there was no effect on caregivers' feeling of being ashamed and isolated due to child ADHD (i.e., affiliate stigma; Mikami et al., 2015) immediately after BC-ADHD, findings suggested a sleeper treatment effect at 6-month follow-up (small to medium ES). In BC-ADHD, group therapy techniques are used to connect caregivers with one another and offer emotional validation, thereby reducing caregivers' sense of isolation and stigma and helping them overcome barriers to care. These findings are important because affiliate

stigma was associated with poor caregiver mental health outcomes, social isolation from family members, friends, and colleagues, and negative parenting in caregivers of children with ADHD (e.g., Mikami et al., 2015). Future investigations of BC-ADHD should also examine whether program participation leads to a reduction in parents' level of stress.

Caregivers of children with ADHD may have concerns about potential adverse effects of behavior therapy (e.g., their child might be considered a problem child or be treated differently by others; their child might react negatively to behavioral techniques; Fiks et al., 2012, 2013). The findings of this study suggest that BC-ADHD may lead to immediate and sustained reductions in concerns about adverse effects related to behavior therapy. In line with the results of the proof-of-concept study (Nissley-Tsiopinis et al., 2023), the current study provided evidence that BC-ADHD was associated with increases in the acceptability of behavior therapy and reductions in feasibility concerns at post-treatment. BC-ADHD may dispose caregivers to have more positive views about behavior therapy, perhaps contributing to an increase in willingness to pursue this treatment. However, these effects were not sustained at follow-up. Given the sizable increase in lifetime implementation of behavior therapy at follow-up, the experience of being involved in this intervention may have prompted a reemergence of concerns about its feasibility.

Similarly, these findings suggest that BC-ADHD may lead to immediate and sustained reductions in concerns about adverse effects related to medication. This is important because caregivers are often concerned that medication might change their child's personality or be addictive (Fiks et al., 2012, 2013). Current findings, however, differ from those of the proof-of-concept study, in which there was evidence of increased concerns about adverse effects of medication in response to the program. It should be noted that the sample size in the proof-of-concept study was very small ($n = 11$) and the follow-up period was short (6 weeks). Further, rates of lifetime medication use at baseline in the proof-of-concept (45%) were lower than the current pilot (64%). Caregivers in the current study may have expressed more

positive views about medication during sessions than those in the proof-of-concept study, contributing to fewer concerns about medication at post-intervention. Additional research is needed to determine if these findings can be replicated. In addition, BC-ADHD was associated with increased medication acceptability at follow-up. There were no changes in medication feasibility concerns or in medication-related stigma. However, when floor effects were accounted for, there were small-to-medium decreases at post-treatment (medication feasibility concerns) and follow-up (medication related stigma) in response to BC-ADHD. These results differ from those found in the proof-of-concept study in which there was some evidence of increased concerns about stigma related to medication. Additional research is needed to resolve this discrepancy. Current findings suggest that BC-ADHD may be successful in reducing the feasibility and stigma concerns of caregivers who are unsure about whether to pursue medication for their child.

In line with its theory of change (see Nissley-Tsiopinis et al., 2023), BC-ADHD is not only designed to improve proximal outcomes (perceptions and beliefs) but also to increase distal outcomes (utilization of evidence-based treatment). Corroborating results of the proof-of-concept study (Nissley-Tsiopinis et al., 2023), there was a large increase in the use of behavior therapy over time. At baseline, only 20% of families reported lifetime use of behavioral treatment, but this increased to 85% at follow-up. Approximately 74% of these families initiated behavioral treatments since completing BC-ADHD; all of them initiating behavioral treatment within the specialty pediatric clinic where BC-ADHD was offered. The large effect found with the full sample was sustained when ceiling effects were accounted for. There was also a small increase in medication utilization from baseline to follow-up (17%). However, it is important to note that 64% of families participating in this pilot study reported child lifetime use of medication to treat ADHD (and 59% were still on medication) at baseline. Families of children on medication were eligible because this was a pilot trial and the "newly diagnosed" inclusion criterion was extended to within 2 years for feasibility reasons. This was allowed because BC-ADHD has potential benefits with

regard to initiating non-pharmacological, psychosocial interventions at home and school. Nonetheless, the inclusion of a relatively high percentage of families with children on medication potentially placed limits on the amount of change possible and might have influenced the direction of the findings. Accounting for this ceiling effect moved the effect size from small-to-medium to medium-to-large, perhaps highlighting the usefulness of providing BC-ADHD sooner after diagnosis. However, the presence of families whose children were already taking medication in the group might have led to discussions that addressed parents concerns in a way that would not have been the case if most children were medication naïve; thus improving the results. Importantly, it is possible that some families who did not initiate follow-up treatment may no longer require additional treatment. In the future, it will be important to assess not only outcomes but family perceptions of need for treatment at post-intervention and then examine initiation of interventions at follow-up in relation to post-intervention outcomes and family perception of need for treatment post-intervention.

Although BC-ADHD was designed to target direct service-level barriers (e.g., caregiver empowerment, affiliate stigma, and treatment preferences) as well as actual service use at follow-up, the current findings suggest the program may have benefits in changing behavior at the level of the child with regard to reducing level of impairment (medium to large ES at follow-up). BC-ADHD includes key components of behavioral parent training (e.g., positive attention, strategic ignoring, and manipulation of antecedents), which may have contributed to children's improvement. However, it should be noted that a high percentage of families initiated behavior therapy during the follow-up period, which may have also accounted for this effect. Future studies should also assess whether BC-ADHD leads to change in child behavior.

Limitations

Several limitations of this study should be noted. First, the study used an open-trial, within subjects design and thereby was not able to control for

some threats to internal validity. Additional research using a control group is strongly needed. Second, our findings might have been influenced by conducting the study in a co-located, subspecialty pediatric clinic in which medication and behavior therapy were generally quite accessible. Nearly 60% of the families had children receiving medication at the start of the program, likely contributing to more favorable views about medication than may be found in settings in which a lower percentage of children are medicated. The availability of follow-up behavior therapy to families in this setting also likely contributed to the dramatic increase in use of this intervention at 6-month follow-up. Offering BC-ADHD in a context in which BPT is less accessible likely would not have resulted in such a notable increase. These latter findings highlight the critical importance of advocating for widespread availability of behavioral interventions for children with ADHD (DuPaul et al., 2020; Wolraich et al., 2019). Third, the sample was mainly constituted of White, educated, mothers working full-time and living in two-caregiver households. Future work is needed to evaluate this intervention in high-need/low-resourced families, including historically marginalized families who may experience significant barriers to treatment engagement. A study is currently being conducted to adapt BC-ADHD for delivery in urban primary care with low-income and minoritized families. Fourth, outcome evaluation was based on caregiver-report measures. Caregivers may have been biased in perceiving favorable outcomes given their investment in the program. In the future, the use of additional methods of measurement, such as teacher reports of school service use and medication data extracted from electronic health records, is recommended. Fifth, all groups were delivered by the same therapist team, and content and process fidelity were reported by the two clinicians providing the program. Future studies should include more therapists, and use independent coders to conduct fidelity coding, and implement methods such as the Motivational Interviewing Treatment Integrity Coding Manual (Moyers et al., 2014; Sibley et al., 2016).

Conclusions

This open trial represents the first pilot study of BC-ADHD and provides evidence of its feasibility, acceptability, and potential efficacy of this program. BC-ADHD appears to have promise as an intervention to prepare caregivers to seek and obtain evidence-based treatments for their children with ADHD. The findings support the need for future controlled studies with larger, diverse, and at-risk primary care samples of families who are in the early stages of coping with their child's ADHD, using multiple methods of outcome assessment.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by internal funding from the Institut du Savoir Montfort (ISM). We are grateful to the families who participated in this study and to pediatricians who provided referrals. The researchers also extend their deepest gratitude to Dr. Jennifer Betkowski (1977-2018) for the training and consultation she has provided to them in motivational interviewing.

ORCID

Sébastien Normand  <http://orcid.org/0000-0001-5462-6664>
 Jennifer A. Mautone  <http://orcid.org/0000-0002-2712-5255>

Jason M. Fogler  <http://orcid.org/0000-0002-5566-8783>
 Thomas J. Power  <http://orcid.org/0000-0001-6651-4002>
 Jenelle Nissley-Tsiopinis  <http://orcid.org/0000-0003-2680-3605>

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