

RESEARCH

Parenting Children with Disruptive Behaviours: Evaluation of a Collaborative Problem Solving Pilot Program

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ABSTRACT

Collaborative Problem Solving (CPS) teaches parents to empathize with their children's difficulties and find collaborative ways of solving problems. The aims of this pilot were to develop a CPS group intervention and evaluate its feasibility and preliminary efficacy for parents of children with disruptive behaviours. The parents of 12 children (N= 19) with Tourette syndrome and oppositional defiant disorder participated in a group intervention. Parents completed the Eyberg Child Behavior Inventory (ECBI), Social Competence Scale, and Parenting Stress Index-Short Form (PSI-SF) at four time points. Feasibility data were collected. The group approach was feasible and acceptable to families, with high attendance and homework completion, low attrition, and favorable parent satisfaction ratings. Improvements at the end of the intervention and at follow-up were noted on the ECBI for mothers and fathers and there were significant reductions in mothers' stress on the PSI-SF. Preliminary findings suggest that CPS offered to parents in a group format may reduce child disruptive behaviors and decrease parent stress. Further investigation with a larger sample size and control group is recommended.

KEYWORDS: Parent training; disruptive behaviour; Tourette syndrome; Collaborative Problem Solving

Disruptive behaviour is observed across many clinical populations, including children with Tourette syndrome (TS). Although tics are the hallmark of TS, it is often problems with emotion regulation and

disruptive behaviour that most concern parents and cause the greatest interference with a child's well being. For children with TS, this might manifest as low frustration tolerance and inflexibility. From a

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parent's perspective, oppositional noncompliant behaviour and temper outbursts are often of primary concern. In fact, disruptive behaviours such as aggression, anger, and noncompliance are among the most distressing features of children with TS reported by parents in clinical settings (Dooley, Brna & Gordon, 1999; Budman, Rockmore, Stokes, & Sossin, 2003) and in community surveys (Kurlan et al., 2002). Children who have trouble with emotion regulation and cognitive flexibility can exhibit behaviours that are wide-ranging, from chronic and persistent argumentativeness and resistance to direct commands, to verbal and physical aggression, including the destruction of property or harm to self and/or others. The prevalence of disruptive behaviour in children with TS ranges from 15% to 65% according to different studies (e.g., Kurlan et al., 2002; Budman et al., 2003). Medication may be helpful in calming emotional reactivity (see Niederhofer, 2003 for a brief review), but pharmacological interventions alone are limited in their ability to teach skills such as managing negative emotions and thinking flexibly amidst frustration.

Traditional approaches to manage children's disruptive behaviour, such as parent training programs and behavioural family therapy, have met with success in increasing child compliance in clinical populations and there is a rich literature in this regard (e.g., Breston & Eyberg, 1998; Kazdin, 2005; Harris, 2007). These programs teach parents how to manage disruptive behaviours through behaviour modification principles, such as positive reinforcement, use of appropriate commands, setting clear expectations and limits, mild punishment such as "time out" and implementing contingency systems (McMahon & Wells, 1998; Scahill et al., 2006). However, it is less clear if these programs address the children's underlying skill deficits, such as emotion regulation and problem solving in the face of frustration. Further, as these behavioural approaches often punish children for noncompliant behaviour, the unintended negative impact on self-esteem for children who are already struggling with skill deficiencies is a concern, as is the integrity of the parent-child relationship. There is also the possibility that consequences in response to disruptive behaviour can lead to power struggles,

thereby at times increasing a child's oppositionality, something that many parents and teachers report anecdotally. In this regard, there is evidence to support that staff redirection or limit setting typically precedes most assaultive behaviour on child inpatient units (Ryan, Hart, Messick, Aaron, & Burnette, 2004), suggesting that traditional behaviour management strategies may in some circumstances lead to behavioural escalation.

Some researchers have argued for a greater focus on emotion (Ramsden & Hubbard, 2002) and parental empathy (Warren, 2004) in parenting interventions for children with disruptive behaviour. For instance, research indicates that parental empathy has a regulatory effect on- and is a deterrent to aggression (Feshbach, 1989). Interpreting oppositional behaviour as simply defiance runs the risk of ignoring underlying impairments in emotion regulation. Collaborative Problem Solving (CPS) is an alternative parenting approach developed by Greene (2001) that places an emphasis on emotion regulation and the underlying cognitive skills necessary for problem-solving. CPS posits that children's noncompliant behaviour is neither manipulative nor volitional, but rather is akin to a learning disability in the area of frustration tolerance/emotion regulation. CPS is a transactional approach (Greene, Ablon, & Goring, 2003) that considers parent- and child factors that can lead to dysfunctional parent-child interactions and noncompliant behaviour in children. The approach asks parents to examine antecedents to noncompliance and to recognize their children's underlying cognitive and emotional difficulties. Strategies focus on empathizing with children's emotions and finding collaborative ways to avert adult-child conflicts while helping to teach children the problem-solving skills they lack.

Parenting competency and, conversely, parenting stress are important issues to consider when children present with dysregulated behaviours. Studies have shown that parents of children with disruptive behaviour disorders report clinical levels of parenting stress on standardized measures (e.g., Ross, Blanc, McNeil, Eyberg, & Hembree-Kigin, 1998). A growing body of research has suggested that a mismatch between parents' perceived resources (i.e.,

knowledge and self-efficacy beliefs) and the actual demands of the parenting role can lead to an increased risk of dysfunctional parenting (see Morgan, Robinson & Aldridge, 2002 for a review). By involving parents in addressing their children's underlying difficulties, CPS aims both to restore a sense of parenting efficacy (thereby reducing parenting stress) and to effect change in children's disruptive behaviours.

The CPS approach has reached a wide audience of parents and professionals through books (Greene, 2001; Greene & Ablon, 2006; and Greene, 2008) and the mainstream media. As the number of parents and professionals embracing CPS increases, it becomes essential to systematically evaluate its efficacy. As this is a relatively new approach, there have only been a few studies thus far examining the efficacy and impact of CPS. In a randomized study, Greene and colleagues (2004) demonstrated that teaching parents CPS resulted in similar improvements on parent ratings of oppositional behaviour and parenting stress, and superior improvements on the Clinical Global Impression at post-intervention and 4-month follow-up, relative to a comparison group that received traditional parent training based on Barkley's (1997) 10-week behaviour management program. In an inpatient child psychiatric unit in Massachusetts, CPS was found to markedly reduce the episodes of restraint (from 281 restraints in the nine months preceding staff training in CPS to only one episode in the 15 months following CPS training) and staff and patient injuries (from an average of 10.8 injuries per month pre-CPS to an average of 3.3 injuries post-CPS) (Greene, Ablon, Hassuk, Regan, & Martin, 2006). A similar five-year prospective study revealed that when inpatient staff were trained in CPS, there was a 37.6-fold reduction in the use of restraints (from 263 events per year to 7 events per year) and a 3.2-fold reduction in the use of seclusion (from 432 events per year to 133 events per year). (Martin, Krieg, Esposito, Stubbe, & Cardona, 2008).

It is important to replicate and extend these findings about the promise of CPS by applying CPS to other clinical populations and treatment modalities. For instance, many parents and providers seek interventions in the group format.

Group treatment is highly cost effective (Edwards, Ceilleachair, Bywter, Hughes, & Hutchings, 2007) and fosters an environment in which parents can provide mutual support (Conwill, 1986).

This pilot study represents an effort to adapt CPS for delivery in a group context for parents of children with disruptive behaviours, including TS and oppositional defiant disorder (ODD). We hypothesized that the approach would be feasible and acceptable to families as measured by attendance, retention, homework completion and satisfaction. Additionally, we aimed to evaluate its preliminary efficacy for reducing child oppositional behaviours and decreasing parenting stress.

METHOD

Participants

Study participants were the parents of children under the age of 12 who met criteria for TS or another tic disorder and for ODD. All children were patients in the Tourette Syndrome Neurodevelopmental Clinic (TSNC) at University Health Network who had been assessed by a clinic psychiatrist with expertise in the diagnosis of TS and its comorbid conditions (attention deficit hyperactivity disorder [ADHD] and obsessive compulsive disorder or subclinical obsessive compulsive behaviour [OCD/OCB]). As part of regular patient care, each psychiatrist in the TSNC conducts a thorough assessment of TS/tic disorders (using DSM-III-R), OCD, and ADHD using a semi-structured clinical interview and standardized questionnaires including the Yale Global Tic Severity Scale. DSM-III is used since DSM-IV criteria have not been widely accepted by TS experts. The DSM-IV criterion that individuals must experience distress is inappropriate for a neurological condition in young children. The criterion of 3 months' absence of symptoms contradicts the waxing and waning nature of the disease (Freeman, 1997).

Parents of children meeting criteria for conduct disorder (CD), current suicidality/homicidality, current or past history of psychosis, history of brain injury/neurological conditions (other than TS), or estimated full-scale IQ below 80 were ineligible to

participate. Families who had previous CPS treatment were excluded from this project, as were families engaged in ongoing psychosocial interventions. Children receiving concurrent pharmacotherapy were not excluded from the pilot. Medication was documented, and in cases in which the medication regimen changed during the pilot period, changes in medication and/or dosages were recorded. Eighteen families were screened, of which 15 families met criteria to participate. Three families were ineligible (one child did not meet criteria for ODD, one child met criteria for CD, and one child had a history of a neurological condition).

Procedure

Ethics approval for this study was received from the Research Ethics Board at the University Health Network. The referring psychiatrists used a screening flowchart as they met with TSNC patients. We contacted referred families by telephone, and interested families subsequently presented for an intake interview in which both informed parent consent and child assent were provided. The child's only involvement in the pilot was a cognitive screening using the two-subtest form of the Wechsler Abbreviated Scale of Intelligence (WASI, 1999) to estimate general cognitive functioning in cases where no cognitive assessment had already been conducted.

Parents participated in diagnostic interviews using the ODD and CD subsections of the Schedule for Affective Disorders and Schizophrenia for School-Aged Children – Present and Lifetime Version (K-SADS-PL; Kaufman et al., 1997). The K-SADS-PL is a semi-structured diagnostic interview with strong reliability and validity designed to assess current and past episodes of psychopathology in children and adolescents according to DSM-IV criteria. Diagnoses of ODD and CD were considered appropriate when parents conclusively endorsed symptoms of the disorders as presently occurring. All children in the final sample met criteria for ODD but did not meet criteria for CD. Families who were ineligible for the program were offered standard care in the TSNC. To make participating easier for subjects, families were reimbursed for parking for all visits, on-site

babysitting was available for identified children and/or siblings as needed, and dinner was provided at each session.

This study utilized a repeated measures design. Intake/baseline appointments occurred approximately two months before the treatment began. Participants completed the same three assessment questionnaires at four time points: baseline (following the intake procedure), pre-intervention, post-intervention and at 2-month post-intervention follow-up (“booster” session). The goal of including the baseline assessment point was to demonstrate that participants' ratings did not change solely due to the passage of time. Participants completed an anonymous satisfaction survey at the final treatment session. All parents completed their questionnaires without conferring with their spouse.

Parents also participated in three telephone interviews at pre-intervention (baseline and pre-intervention were combined into a single phone interview due to practical constraints), post-intervention, and 2-month post-intervention follow-up, with an independent rater. The raters administered two measures (Oppositional Defiant Disorder Rating Scale and the Clinical Global Impression). The phone interviews, arranged at the parents' convenience, occurred separately for each member of a couple. The independent raters were doctoral-level clinical psychologists who were trained via mock telephone interviews to establish reliability. Independent raters were utilized to avoid bias since we played the dual role of investigators and clinicians (i.e., conducting the intakes and implementing treatment).

Two separate treatment groups were completed approximately one year apart. Eleven parents of seven children (6 mothers; 5 fathers) participated in the first group and eight parents of five children (5 mothers; 3 fathers) participated in the second group. Identical screening, assessment procedures and curriculum were used.

Treatment Development and Implementation

In order to inform curriculum development, input from relevant consumers (i.e., parents of children with disruptive behaviour disorders) was sought via a

focus group. Specifically, the goal of the focus group was to gather information in order to expand the content of an existing four-session workshop model about CPS (developed in the TSNC) into a manualized group treatment intervention. Families who had participated in earlier CPS workshops in the TSNC were invited to attend a focus group. Seven families attended the 90-minute focus group that we led. Parents were asked numerous questions about both the structure/format and the content of the workshop they had previously attended. They were invited to brainstorm about how the program could be improved to more fully meet parents' needs in the context of a longer treatment group. With participant consent, the focus group was audiotaped, transcribed and studied for relevant themes. The information provided by parents helped to guide treatment manual development.

Following the focus group, we wrote the curriculum (a manualized binder for parents). Binders were divided into seven sections (representing the first seven sessions; the last session involved no written material as the goals of this session were review and roleplay). Each section of the binder contained the following: a session outline, written material explaining new concepts, practice exercises, and homework sheets. Two parent consultants (parents who understood and had successfully implemented CPS with their children) had assisted with review and modification of the curriculum/binder. The curriculum focused on helping parents:

- understand that their children's behavioural difficulties and emotional dysregulation (as manifested by noncompliance) are not intentional, but rather due to underlying skill deficits
- identify pathways contributing to the development of noncompliant behaviour (e.g., impulsivity, anxiety, poor executive functioning skills)
- make environmental changes to prevent difficulties
- understand the three basic parenting strategies ("Plans A, B and C"), with a focus on the collaborative problem solving strategy known as

"Plan B"

- learn and become comfortable with the specific steps of Plan B (empathy, defining the problem, inviting their child to problem-solve), and
- recognize their own pathway challenges which can interfere with effective parenting

The treatment groups consisted of eight weekly two-hour sessions, which we led along with a student observer. We began each session with a review of the previous session's homework (which parents submitted) followed by a short didactic presentation of new material and opportunities for discussion and practice (e.g., group exercises and roleplays), and ended with the assignment of new homework.

Although the group followed a manual, session content was easily adapted to accommodate specific parent scenarios or questions. We consistently modeled flexibility and collaborative problem solving and required parents to practice these same skills in session.

Treatment Adherence

With participant consent, sessions were audiotaped for the purpose of content analysis. The independent raters analyzed a randomly chosen 20% (approximately 25 minutes) of each tape for treatment fidelity using a modified version of the treatment adherence scale developed by Greene (2004) for his pilot comparing CPS to behaviour management. Items relating to traditional behaviour management were dropped, and three items pertaining to CPS (e.g., "Therapist discussed child characteristics that can underlie problematic behavior") were rated on a 5 point-Likert-scale ranging from "was not focused on/mentioned in the session" to "was a major focus of this session". Scores were averaged for each session and a mean score across sessions was calculated.

Feasibility Measures

Attendance, attrition, and homework completion.

Weekly attendance was documented categorically (yes/no), as was weekly homework completion

(completed/not completed). Attrition was monitored by classifying each participant as a “completer” (attended at least five of the eight sessions) or a “terminator” (started the group but dropped out before the fifth session). Reasons for dropping out were noted. There were 6 homework exercises that were assigned and collected across the course of the intervention and completion was documented categorically (completed/not completed).

Satisfaction questionnaire

Following the intervention, participants anonymously completed a short survey (Likert-scale and open-ended questions) indicating their perceptions of the experience. They were asked “how helpful” they found various topics (e.g., Plan B) and elements (e.g., roleplaying). They also reflected on a number of issues including length of sessions, number of participants, effectiveness of training, and their preparedness to use the CPS approach.

Preliminary Efficacy Measures

The Eyberg Child Behavior Inventory (ECBI) (Eyberg, 1999) is a brief (36-item) parent rating scale designed to assess the current frequency/intensity of disruptive behaviours at home on a seven-point Likert scale from “never” to “always”, and whether parents find these behaviours problematic (yes/no). The ECBI has strong psychometric properties including good inter-parent reliability and strong internal consistency ($\alpha = .95$ for the Intensity scale and $\alpha = .93$ for the Problem scale). There is much support for the validity of the ECBI as a concise measure of childhood problem behaviours (Boggs, Eyberg, & Reynolds, 1990), and it is a sensitive measure of change in treatment outcome studies (see Eyberg, 1999). Both scales (Intensity and Problem) were examined for changes over time.

The Oppositional Defiant Disorder Rating Scale (ODDRS) is an unpublished measure developed by Greene (2004). It consists of 17 statements corresponding to the DSM-IV criteria for ODD. Each statement is rated by parents according to a five-point Likert scale ranging from 1 (false/never)

to 5 (always true/very often), and the measure yields a total score.

The Clinical Global Impression (CGI) (National Institute of Mental Health, 1985) includes two subscales: Severity of Illness and Global Improvement, each measured on a seven-point Likert scale. The Severity of Illness subscale was measured at three time points while the Global Improvement subscale was used at post-intervention and follow-up only. The independent raters used the ODDRS questionnaire to gather information about child functioning in order to inform their CGI ratings.

The Social Competence Scale (SCS) (Conduct Problem Prevention Research Group, 1995) is a 12-item parent rating scale of children’s positive social behaviours. Items are rated on a five-point Likert scale from “not at all” to “very well”. The measure yields the Prosocial/Communication Skills scale and the Emotion Regulation Skills scale. The SCS has good internal consistency among items ($\alpha = .8$ for both subscales and $\alpha = .87$ for the total score). Both scales were examined for changes over time.

The Parenting Stress Index – Short Form (PSI-SF) (Abidin, 1995) is a derivative of the full-length Parenting Stress Index. On this standardized 36-item self-report questionnaire, parents respond to statements on a 5-point Likert scale (Strongly Agree to Strongly Disagree). The questionnaire yields an overall score (Total Stress) that reflects stress related to the parenting role (not to other life stressors). Subscale scores (Parenting Distress [PD], Parent-Child Dysfunctional Interaction [P-CDI], Difficult Child [DC]) were also considered. Like the PSI, the PSI-SF has strong psychometric properties including good test-retest reliability ($r = .84$), internal consistency ($\alpha = .91$), and validity based on correlation with the full-length version ($r = .94$).

Analytic Plan

Demographic information is summarized as means and standard deviations for continuous variables and as percentages for categorical variables. Feasibility data are presented as frequencies and percentages. Parent satisfaction data were pooled across mothers and fathers and are presented as percentages. Ratings of 4 and 5 (on a 5-point Likert scale where 5

indicates “very true”) are considered to be high ratings.

Efficacy data from mothers and fathers were analyzed separately since these data were not independent (i.e., co-parents rated the same child). Raw scores were used in the analyses. Changes in scores over time were tested through a series of repeated measures ANOVAs. An alpha level was set at .05. Bonferroni-adjusted pairwise comparisons were conducted to determine at which time point(s) significant changes occurred. The adjustments were made due to multiple comparisons, providing conservative estimates of significance. Given that no changes were occurring between baseline and pre-intervention, or between post-intervention and follow-up, linear contrasts were done to examine whether the average of baseline/pre-intervention (or pre-intervention only in the case of the ODDRS and CGI) were significantly different from the average of post-intervention/follow-up.

Finally, effect sizes were calculated for the ECBI, as this measure was deemed the strongest estimate of child improvement. Effect sizes were calculated by subtracting the average of the post-intervention and follow-up means from the average of the baseline and pre-intervention means and dividing by the pooled standard deviation. Effect sizes were categorized as small ($d = .2$), moderate ($d = .5$) and large ($d = .8$) (Cohen, 1988).

RESULTS

Characteristics of the Participants

Of the 15 families who met criteria and initially consented to participate, 12 families completed treatment. Prior to beginning treatment, two families decided not to participate (due to travel distance) and one family terminated during treatment (see Treatment Adherence below). Nineteen parents completed the treatment group (seven couples, one individual father, and four individual mothers).

All 12 children met the criteria for ODD and 11 had a diagnosis of TS, with one child meeting criteria for chronic motor tic disorder. The children ranged in age from six to 12 with a mean age of 9.33. See Tables 1 and 2 for other demographic

information about children and parent participants.

Treatment Adherence and Feasibility

Key CPS themes were rated 4.4 overall on the 1-5 treatment adherence scale, indicating high treatment fidelity.

Attrition was very low with only one family (2 parents) dropping out of the treatment group due to extenuating family circumstances unrelated to treatment. These two parents were deemed terminators and were not included in the overall sample, as they did not complete post-intervention and follow-up assessments.

Very high attendance and homework completion were observed across participants. Ninety-one percent of mothers ($n=10$) and 88% of fathers ($n=7$) missed no more than one of the treatment sessions, and no more than one of the homework assignments.

Table 1. Demographic Characteristics of Children (N= 12)

Gender	Female: 2 (16.67%) Male: 10 (83.33%)
Age	9.32 (1.72)
ADHD	12 (100%)
OCD/OCB	8 (66.67%)
Number of medications	0: N= 3 (25%) 1: N= 3 (25%) 2+ N= 6 (50%)

Note: Standard deviations in parentheses for continuous variables. Frequency and percentages in parentheses for categorical variables.

ADHD is attention deficit hyperactivity disorder.

OCD/OCB is obsessive compulsive disorder/obsessive compulsive behaviour.

Table 2. Demographic Characteristics of Parents

	Mothers (n= 11)	Fathers (n= 8)
Age	38.72 (4.76)	39.75 (6.80)
Education	14.64 (2.01)	14.75 (2.92)
Single Parent	1	0

Note: Standard deviations in parentheses. Education reported in years.

Effects of Treatment on Parent Ratings of Child Behaviour

Among mothers, a repeated measures ANOVA showed there was a significant improvement over time on the Intensity scale of the ECBI, $F(3, 30) = 9.56, p < .001$, as well as on the Problem scale, $F(3, 30) = 7.07, p = .001$. Bonferonni-adjusted pairwise comparisons (see Table 3) revealed that

significant changes did not occur between baseline and pre-intervention, indicating that the passage of time alone was not producing the effect. The changes over time are demonstrated in Figure 1. A linear contrast revealed that the average of baseline and pre-intervention scores was significantly higher than the average of post-intervention and follow-up scores, $F(1, 30) = 25.65, p < .001, d = 0.91$, on the Intensity scale as well as on the Problem scale, $F(1, 30) = 14.63, p < .001, d = 1.06$.

Among fathers, ECBI-Intensity scores also changed significantly over time, $F(3, 20) = 6.75, p = .003$, as did Problem scores, $F(3, 18) = 16.82, p < .001$, with pairwise comparisons (see Table 3) indicating that significant changes occurred in the expected timeframe from pre-intervention, 159.63 ± 12.27 for Intensity and 21.50 ± 4.57 for Problem, to post-intervention, 137.75 ± 18.54 for Intensity and 15.14 ± 4.98 for Problem, (see Figure 1). A linear contrast revealed that the average of baseline and pre-intervention scores was significantly higher than the average of post-intervention and follow-up scores on the Intensity scale, $F(1, 20) = 19.55, p < .001$, effect size = 1.12, as well as on the Problem scale, $F(1, 18) = 49.79, p < .001, d = 1.12$.

Table 3. ECBI Comparison for Mothers and Fathers

	Mothers		Fathers	
	Intensity	Problem	Intensity	Problem
Baseline to Pretest	0.556	0.107	1.0	1.0
Baseline to Posttest	0.001*	0.005*	0.019*	< 0.001*
Baseline to Follow-up	0.001*	0.001*	0.086	< 0.001*
Pretest to Posttest	0.071**	1.0	0.011*	0.001*
Pretest to Follow-up	0.061**	0.569	0.053**	0.001*
Posttest to Follow-up	1.0	1.0	1.0	1.0

* Significant at < .05

** Trend toward significance

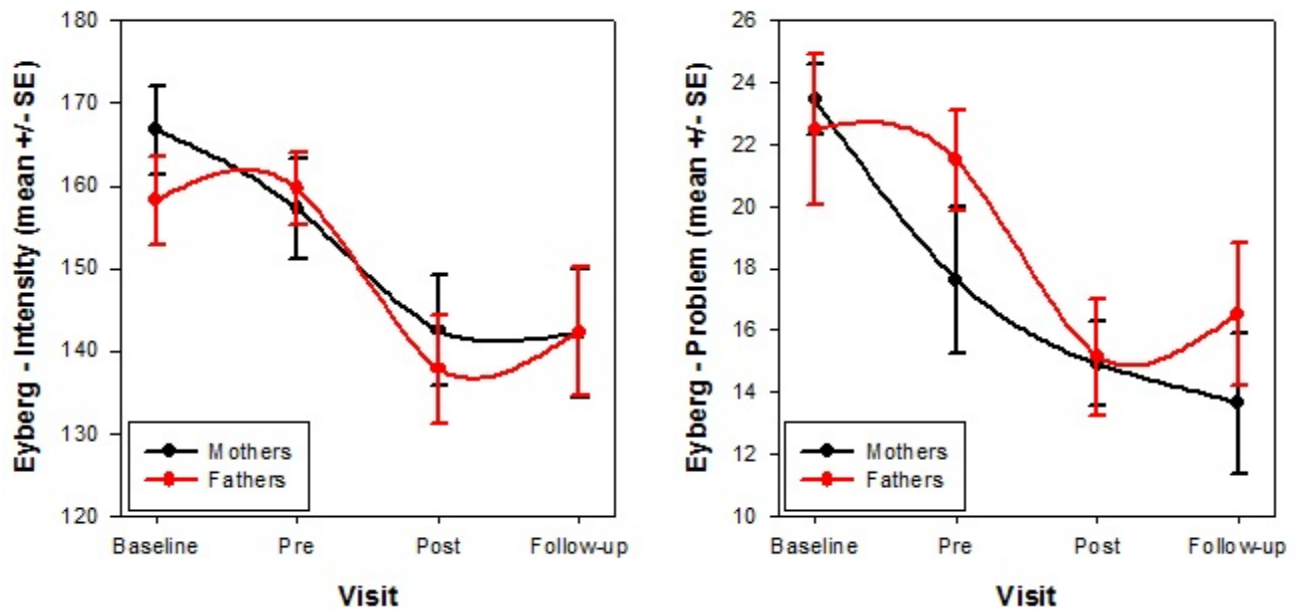


Figure 1. Parental ratings on the Eyberg Child Behavior Inventory (ECBI) Intensity and Problem scales at all four assessment points. Clinical cutoffs for the ECBI are scores of 131+ on Intensity and 15+ on Problem.

With respect to the SCS, significant improvements (i.e., increases in scores) were found among mothers on the Emotion Regulation scale, $F(3, 30) = 5.78, p = .003$. Pairwise comparisons found the significant improvement occurred only between baseline and follow-up, from 3.55 ± 1.75 to $6.64 \pm 2.77, p = .003$, and linear contrasts revealed that the average of baseline and pre-intervention scores was significantly lower than the average of post-intervention and follow-up scores, $F(1, 30) = 14.10, p = .001$. There were no significant changes on the Prosocial/Communication scale of the SCS for mothers.

Among fathers, again only scores on the Emotion Regulation scale increased over time, $F(3, 21) = 3.23, p = .043$. However, after adjusting for multiple comparisons, none of the differences in scores across timepoints reached statistical significance. A linear contrast showed that among fathers, the average of the SCS-Emotion Regulation scale baseline and pre-intervention scores was significantly lower than the average of the post-

intervention and follow-up values, $F(1, 21) = 8.13, p = .010$, indicating improvements over time.

On the ODDRS, significant improvements were noted following the intervention for mothers only, $F(2, 20) = 4.96, p = .018$. Pairwise comparisons found that pre-intervention scores were significantly higher than post-intervention scores, from 55.00 ± 9.07 to $43.77 \pm 9.54, p = .028$, and marginally higher than follow-up scores, $45.09 \pm 13.53, p = .058$. A linear contrast found that ODDRS pre-intervention scores were significantly higher than the average of the post-intervention and follow-up values, $F(1, 20) = 9.80, p = .005$.

Clinical Global Impressions of Independent Raters

Among mothers, CGI-Severity scores were found to decrease significantly over time, $F(2, 20) = 3.55, p = .048$. However, after adjusting for multiple comparisons, none of the pairwise comparisons reached statistical significance. Since CGI-Severity scores are ordinal, repeated measures tests may not

be sensitive enough to detect changes on this scale. A linear contrast found that among mothers, the Severity pre-intervention scores, 4.00 ± 0.63 , were significantly higher than the average of the post-

intervention and follow-up values, 3.36 ± 0.92 , $F(1, 20) = 7.10$, $p = .015$.

Among fathers, Severity scores also changed significantly over time, $F(2, 13) = 8.61$, $p = .004$,

Table 4. Results on the PSI-SF for Mothers

Scale	Visit	Mean (SD)	ANOVA (<i>F</i>)	Pairwise Comparisons			
				Baseline to Posttest	Baseline to Follow-up	Pretest to Posttest	Pretest to Follow-up
PSI-PD	Baseline	35.27 (5.97)	14.86*	0.001*	< 0.001*	< 0.001*	< 0.001*
	Pretest	35.36 (7.53)					
	Posttest	28.45 (6.80)					
	Follow-up	28.09 (6.17)					
PSI-PCDI	Baseline	27.55 (6.12)	2.06	NS	NS	NS	NS
	Pretest	30.80 (5.85)					
	Posttest	28.45 (4.91)					
	Follow-up	28.82 (7.32)					
PSI-DC	Baseline	45.64 (6.74)	6.57*	0.342	0.004*	0.450	0.006*
	Pretest	45.80 (5.55)					
	Posttest	42.09 (7.15)					
	Follow-up	38.73 (5.68)					
PSI-Total	Baseline	108.45 (11.99)	10.97*	0.042**	0.003*	0.003*	< 0.001*
	Pretest	113.30 (11.15)					
	Posttest	99.00 (15.08)					
	Follow-up	95.64 (13.24)					

Note. PSI-SF = Parenting Stress Index-Short Form; PD = Parental Distress; P-CDI = Parent-Child Dysfunctional Interaction; DC = Difficult Child. For the PSI-SF, scores of 33+ on PD, 26+ on P-CDI, 33+ on DC and 86+ on Total (85th percentile) are high. Baseline to pre-intervention and post-intervention to follow-up comparisons are not included as all were nonsignificant.

* Significant at < .01

** Significant at < .05

with children rated as significantly more severe at pre-intervention, 4.13 ± 0.64 , than at both the post-intervention, 3.14 ± 1.07 , $p = .006$, and follow-up times, 3.38 ± 0.92 , $p = .022$.

The Global Improvement scores for mothers and fathers were moderate and did not change between post-intervention and follow-up. The average of post-intervention and follow-up was 2.09 ± 1.06 for mothers and 2.48 ± 1.35 for fathers where “2” is much improved and “3” is minimally improved.

Parenting Stress Outcomes

Significant declines in parenting stress following treatment occurred for mothers on the PD and DC scales as well as on the total score of the PSI-SF. Table 4 demonstrates the means/standard deviations as well as ANOVA results, and includes the relevant pairwise comparisons. There were no significant changes in parenting stress among fathers (average of baseline and pre-intervention total stress was 105.32 ± 16.26 and the average of post-intervention and follow-up was 102.45 ± 16.00).

Participant Satisfaction

Satisfaction surveys revealed that 95% of parents felt prepared to start using CPS. All subjects believed the number of individuals in the group was appropriate, and 95% liked the length of sessions. Ninety percent of parents felt there was an adequate balance between learning new skills and time for discussion, 89% endorsed sufficient time in the group for hands-on practice and 100% believed their questions were adequately addressed.

Parents rated the helpfulness of various topics covered in the group with primarily high ratings. They deemed all elements of group (e.g., discussion) as helpful, with the exception of roleplaying and homework, for which 26% provided ratings of “3”. Responses to open-ended questions revealed that parents appreciated the structure of group, felt they learned a great deal about their children, and enjoyed connecting with other parents who had children with similar problems. The only suggestion for improvement to the group noted by some parents was a desire for more than eight sessions.

DISCUSSION

In this pilot evaluation, we adapted CPS for delivery in a group format to parents of children with disruptive behaviours (with TS and ODD). We found that this approach was acceptable to families as evidenced by high attendance, excellent homework completion, strong satisfaction ratings and low attrition.

This preliminary treatment evaluation suggests that this approach may be efficacious in reducing disruptive behaviours and parenting stress. Specifically, the changes in parent ratings for both mothers and fathers on the child behaviour measure (ECBI) are noteworthy. For fathers in particular, the finding appears robust in that the active improvement occurred between pre-intervention and post-intervention, demonstrating that it was the intervention and not merely the passage of time that led to perceived improvements in child behaviour. There were also significant improvements noted by mothers on the ECBI. The changes, however, followed the hypothesized course less well with more gradual improvements across all four time points. The decline in mothers’ scores on both scales of the ECBI during the baseline period might represent an anticipation of behavioural improvement since treatment was about to commence. As mothers typically demonstrated greater eagerness for treatment than fathers, it is possible that they more acutely experienced this sense of hope. Large effect sizes on the ECBI for both mothers and fathers are encouraging.

The trend toward treatment gains on the SCS is also worth noting since this finding represents the potential for CPS parenting to build emotion regulation skills in children. The SCS is a short questionnaire with only six items pertaining to emotion regulation. It is hypothesized that a stronger finding might be determined using a more sensitive measure of emotion regulation, such as the Emotion Regulation Checklist (Shields & Cicchetti, 1997) or the System for Coding Affect Regulation in the Family (SCARF; Lindahl, Clements, & Markham, 1993).

A considerable reduction in parenting stress was found for mothers. It is unclear why a similar pattern

did not emerge for fathers. Further exploration of parenting stress and parenting competence – and the impact of these variables on children’s emotion regulation and frustration tolerance in the context of CPS – is necessary. Understanding the child’s perspective about changes in the parent-child relationship following treatment is worthy of investigation.

This pilot evaluation had a number of strengths including adherence testing, the collection of follow-up data, the use of statistical adjustments to provide conservative estimates of significance given the small sample size, and the implementation of treatment with a clinically referred highly comorbid sample. In fact, the high comorbidity with ADHD and OCD, as well as the gender breakdown and mean age are consistent with the TS literature (Stephens & Sandor, 1999; Piacentini, Pearlman, & Peris, 2007). Since the intervention did not focus on characteristics of TS specifically, but rather addressed underlying difficulties that manifested as noncompliant behaviour, there is good reason to believe that similar results might be achieved with a non-TS population, although of course additional investigation is necessary in this regard. Finally, by implementing CPS in a novel format, it was revealed many participants were enthusiastic about group treatment.

As a first attempt to develop and implement a CPS group treatment, this project demonstrated promise, though of course presented with a number of limitations. The findings, including encouraging effect sizes, are nonetheless tentative given the small sample size, the absence of a control group and the relatively short follow-up period, all of which contribute to threats to validity. Further, it must be noted that the clinical significance of the improvements on parent ratings of child behaviour measures and parenting stress is open to interpretation since many of the post-intervention scores, although statistically significantly lower than pre-intervention ratings, remain nonetheless in the clinically concerning range. Offering CPS treatment for only eight weeks may not allow parents sufficient time to fully make the required shift in their parenting style and might be insufficient to effect major improvements in child functioning for severely

dysregulated children (i.e., TS, ODD, ADHD & OCD). Given that the skills that are lacking in the presence of disruptive behaviour (i.e., emotion regulation, cognitive flexibility) are complex skills and that the target children have multiple difficulties, it may be unrealistic to expect large changes over a short period. If one looks to the cognitive rehabilitation literature, which presents some parallels to the training offered here, typically 25+ sessions is standard practice (Medalia & Richardson, 2005).

Relying on parent report rather than direct observation was a limitation of this evaluation. Parent report was selected, however, since it is more feasible than direct observation in the natural environment, and since attempts to measure frustration in a laboratory setting may lack ecological validity. Further, the fact that we played the dual role of clinicians and researchers must be acknowledged, although participants completed all questionnaires independently.

Finally, the potential confound of medication, which could not be entered as a covariate in the analyses due to the small sample size, must be considered. Still, any potential medication confound should be somewhat mitigated by the fact that the children were not treatment naïve and had been on medication and undergoing pharmacological changes prior to commencing this project.

Future Directions

This pilot evaluation represents an important first step in demonstrating the feasibility and value of CPS for parents of children with disruptive behaviour difficulties in a group context. That significance was demonstrated on a number of variables is notable. Following treatment, parents described feeling that they understood their children better. CPS, by teaching parents to acknowledge and empathize with their children’s deficits instead of promoting consequences for negative behaviours, is an approach that is respectful of children. The literature on the efficacy of CPS is still in its infancy but this evaluation marks the beginning of essential independent investigation of this novel treatment approach.

The CPS approach warrants further study with a randomized controlled design and a larger sample size. Although participants endorsed the advantages of social support, we believe that the treatment itself positively contributed to improvements for children and parents. Further research, comparing CPS group treatment to a support group control, is necessary to separate the active treatment ingredient from the impact of social support. Utilizing a longer treatment phase with additional “booster” sessions to allow for the consolidation of skills – as well as longer-term follow-up assessment – may yield greater improvements. Finally, carefully selecting measures not only of disruptive behaviour, but also of children’s emotion regulation and of parenting competence, will help to consolidate and expand on these early findings.

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REFERENCES

- Abidin, R.R. (1995). *Parenting Stress Index* (Third Edition). Odessa, FL: Psychological Assessment Resources, Inc.
- Barkley, R.A. (1997). *Defiant children: A clinician’s manual for assessment and parent training* (2nd ed.). New York: Guilford Press.
- Boggs, S.R., Eyberg, S., & Reynolds, L.A. (1990). Concurrent validity of the Eyberg Child Behavior Inventory. *Journal of Clinical Child Psychology*, 19, 75-78.
- Breston, E.V., & Eyberg, S.M. (1998). Effective psychosocial treatment of conduct-disordered children and adolescents: 29 years, 82 studies, and 5, 272 kids. *Journal of Clinical Child Psychology*, 27, 180-189.
- Budman, C.L., Rockmore, L., Stokes, J., & Sossin, M. (2003). Clinical phenomenology of episodic rage in children with Tourette syndrome. *Journal of Psychosomatic Research*, 55, 59-65.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.
- Conduct Problems Prevention Research Group (CPPRG). (1995). *Psychometric Properties of the Social Competence Scale – Teacher and Parent Ratings*. (Fast Track Project Technical Report). University Park, PA: Pennsylvania State University.
- Conwill, W.L. (1986). Training parents in child behavior-management skills: A group approach. *Journal of Negro Education*, 55, 67-77.
- Dooley, J.M., Brna, P.M., & Gordon, K.E. (1999). Parent perceptions of symptom severity in Tourette’s syndrome. *Archives of Diseases in Childhood*, 81, 440-441.
- Edwards, R.T., Ceilleachair, A., Bywter, T., Hughes, D.A., & Hutchings, J. (2007). Parenting programme for parents of children at risk of developing conduct disorder: Cost effectiveness analysis. *British Medical Journal*, 334, 682-685.
- Eyberg, S. (1999). *Eyberg Child Behavior Inventory*. Odessa, FL: Psychological Assessment Resources.
- Feshbach, N.D. (1989). Empathy training and prosocial behavior. In J. Groebel, J. & A. Hinde (Eds.), *Aggression and war: Their biological and social bases* (pp. 101-111). New York: Cambridge University Press.
- Freeman, R.D. (1997). Diagnosis and management of Tourette Syndrome: Practical aspects. *Medscape Mental Health*, 2(7).
- Greene, R.W. (2008). *Lost at School: How Our Kids with Behavioral Challenges Are Falling Through the Cracks and How We Can Help Them*. New York: Scribner.
- Greene, R.W. (2001). *The Explosive Child* (2nd ed.). New York: HarperCollins Publishers Inc.
- Greene, R.W. & Ablon, J.S. (2006). *Treating Explosive Kids: The Collaborative Problem Solving Approach*. New York: The Guilford Press.
- Greene, R.W., Ablon, J.S., & Goring, J.C. (2003). A transactional model of oppositional behavior: underpinnings of the Collaborative Problem Solving approach. *Journal of Psychosomatic Research*, 55, 67-75.
- Greene, R.W., Ablon, J.S., Monuteaux, M.C., Goring, J.C., Henin, A., Raezer-Blakely, L., Edwards, G., Markey, J., & Rabbitt, S. (2004). Effectiveness of Collaborative Problem Solving in affectively dysregulated children with oppositional-defiant disorder: initial findings. *Journal of Consulting and Clinical Psychology*, 72, 1157-1164.
- Greene, R.W., Ablon, J.S., Hassuk, B., Regan, K.M., & Martin, A. (2006). Use of Collaborative Problem Solving to reduce seclusion and restraint in child and adolescent inpatient units. *Psychiatric Services*, 57(5), 610-612.
- Kaufman, J., Birmaher, B., Brent, D., Rao, U., Flynn, C., Moreci, P., Williamson, D., & Ryan, N. (1997). Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime version (K-SADS-PL): Initial reliability and validity data. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36, 980-988.
- Kazdin, A.E. (2005). *Parent Management Training: Treatment for Oppositional, Aggressive, and Antisocial Behavior in Children and Adolescents*. New York: Oxford University Press.
- Kurlan, R., Como, P.G., Miller, B., Palumbo, D., Deeley, C., Andresen, E.M., Eapen, S., & McDermott, M.P. (2002). The behavioral spectrum of tic disorders: A community-based study. *Neurology*, 59, 414-420.
- Harris, K.E. (2007). A meta-analysis of parent management training outcomes for children and adolescents with conduct

- problems. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 68, 4130.
- Lindahl, K., Clements, M., & Markman, H. (1993). The development of marriage: A 9-year perspective. In T. Bradbury (Ed.), *The developmental course of marital dysfunction*. Cambridge: Cambridge University Press.
- Martin, A., Krieg, H., Esposito, F., Stubbe, D., & Cardona, L. (2008). Reduction of restraint and seclusion through Collaborative Problem Solving: a five-year prospective inpatient study. *Psychiatric Services*, 59(12), 1406-1412.
- McMahon, R.J., & Wells, K.C. (1998). Conduct problems. In E.J. Mash & R.A. Barkley (Eds.), *Treatment of Childhood Disorders* (2nd ed., pp. 111-210). New York: Guilford Press.
- Medalia, A. & Richardson, R. (2005). What predicts a good response to cognitive remediation interventions. *Schizophrenia Bulletin*, 31, 942-953.
- Morgan, J., Robinson, D., & Aldridge, J. (2002). Parenting stress and externalizing child behavior. *Child and Family Social Work*, 7, 219-225.
- National Institute of Mental Health. (1985). CGI (Clinical Global Impression Scale). *Psychopharmacological Bulletin*, 21, 839-844.
- Niederhofer, H. (2003). An open trial of buspirone in the treatment of attention-deficit disorder. *Human Psychopharmacology*, 18, 489-492.
- Ramsden, S.R. & Hubbard, J.A. (2002). Family expressiveness and parental emotion coaching: Their role in children's emotion regulation and aggression. *Journal of Abnormal Child Psychology*, 30, 657-667.
- Ross, C.N., Blanc, H.M., McNeil, C.B., Eyberg, S.M., & Hembree-Kigin, T.L. (1998). Parenting stress in mothers of young children with oppositional defiant disorder and other severe behavior problems. *Child Study Journal*, 28, 93-110.
- Ryan, E.P., Hart, V.S., Messick, D.L., Aaron, J., & Burnette, M. (2004). A prospective study of assault against staff by youths in a state psychiatric hospital. *Psychiatric Services*, 55(6), 665-670.
- Piacentini, J.C., Pearlman, A.J., & Peris, T. (2007). Characteristics of Tourette syndrome. In D.W. Woods, J.C. Piacentini, & J.T. Walkup (Eds.), *Treating Tourette Syndrome and Tic Disorders* (pp. 9-21). New York: The Guilford Press.
- Scahill, L., Sukhodolsky, D.G., Bearss, K., Findley, D., Hamrin, V., Carroll, D.H., & Rains, A.L. (2006). Randomized trial of parent management training in children with tic disorders and disruptive behavior. *Journal of Child Neurology*, 21(8), 650-656.
- Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a new criterion q-sort. *Developmental Psychology*, 33, 906-916.
- Stephens, R.J., & Sandor, P. (1999). Aggressive behavior in children with Tourette syndrome and comorbid attention deficit hyperactivity disorder and obsessive-compulsive disorder. *Canadian Journal of Psychiatry*, 44, 1036-1042.
- Warren, M.A. (2004). Parent-child interactions with ADHD children: Parental empathy as a predictor of child adjustment. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 64, 4658.
- Wechsler Abbreviated Scale of Intelligence* (WASI). (1999). USA: The Psychological Corporation.