

Community-Delivered Collaborative and Proactive Solutions and Parent Management Training for Oppositional Youth: A Randomized Trial

Rachael C. Murrhly

The Kidman Centre, University of Technology Sydney
Graduate School of Health, University of Technology Sydney

Sophia A.O. Drysdale
Anna Dedousis-Wallace

Louise Rémond

The Kidman Centre, University of Technology Sydney

John McAloon

Graduate School of Health, University of Technology Sydney

Danielle M. Ellis

The Kidman Centre, University of Technology Sydney

Thorhildur Halldorsdottir

Reykjavik University

Ross W. Greene

Thomas H. Ollendick

The Kidman Centre, University of Technology Sydney
Child Study Centre, Virginia Tech

The aim of this study was to examine the relative effectiveness of Collaborative and Proactive Solutions (CPS) and Parent Management Training (PMT) for youth with oppo-

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Address correspondence to Rachael C. Murrhly, Ph.D., The Kidman Centre, University of Technology Sydney, Prince of Wales Hospital, Randwick, Sydney, NSW 2031. e-mail: rachael.murrhly@uts.edu.au.

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sitional defiant disorder (ODD) in a community setting. Based on a semistructured diagnostic interview, 160 youth with ODD (ages 7–14; 72% male; ethnicity representative of the wider Australian population) were randomized to CPS ($n = 81$) or PMT ($n = 79$) for up to 16 weekly sessions. The primary hypothesis was that participants in the CPS group, treated in a community setting, would exhibit significant improvement in ODD, equivalent to that of an evidence-based treatment, PMT. Assessment was conducted at baseline, post-intervention, and at 6-month follow-up, using independently rated semistructured diagnostic interviews, parent ratings of ODD symptoms, and global ratings of severity and improvement. Analyses were conducted with hierarchical growth linear modeling, ANCOVA, and equivalence testing using an intent-to-treat sample. Both treatments demonstrated similar outcomes, with 45–50% of youth in the nonclinical range

after treatment, and 67% considered much improved. No differences were found between groups, and group equivalency was shown on the independent clinician and parent-rated measures. Gains were maintained at the 6-month follow-up. In conclusion, CPS works as effectively as the well-established treatment, PMT, for youths with ODD, when implemented in a community-based setting. As such, CPS provides a viable choice for families who seek alternate treatments.

Keywords: oppositional defiant disorder; children; randomized control trial; parent training; Collaborative and Proactive Solutions

THE CENTRAL CHARACTERISTIC of oppositional defiant disorder (ODD), as defined in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM), is “a frequent and persistent pattern of angry/irritable mood, argumentative/defiant behavior, or vindictiveness” (American Psychiatric Association [APA], 2013). Typically emerging in the preschool and elementary school years, youths with ODD exhibit a pattern of oppositional and antagonistic behavior alongside symptoms of emotional dysregulation such as irritability and chronic anger (Nock et al., 2007; Rowe et al., 2010). These symptoms result in functional impairment in the home (most commonly), school, or community settings (APA, 2013).

Over the past 40 years, the conceptualization of ODD has evolved considerably (Burke et al., 2018, Murrihy et al., 2010). Once the exclusive domain of hostile and defiant behaviors, the ODD diagnostic category now includes symptoms of emotional dysregulation including anger and irritability (APA, 2013). Historically, ODD had been viewed as a mild or benign condition, that risked over-pathologizing “normal” childhood behavior, and only relevant as a prodrome for conduct disorder (Loeber et al., 2009; Nock et al., 2007). In recent years, however, research has shown that ODD is a “risk marker” for significant physical and emotional impairment (Nock et al., 2007, p. 709). While both ODD and conduct disorder (CD) increase the risk for behavioral disorders later in life, there is a unique risk incurred for ODD for developing emotional disorders in adulthood (Boylan et al., 2012; Rowe et al., 2010).

Since the late 1960’s the most extensively studied treatment for ODD has been Parent Management Training (PMT; Barkley, 1997), which, with child participation, is the “gold standard” in evidence-based treatment for children with disruptive behavior (for reviews, see Kaminski & Claussen, 2017). PMT is based on behavioral

principles, including operant conditioning and applied behavior analysis, delivered within a social learning paradigm (Barkley, 1997). Despite the strong evidence for PMT in treating conduct problems, it does not work to a satisfactory level for 30–50% of individuals between the ages of 2–14 years (Colalillo & Johnston, 2016; Niec et al., 2016; Ollendick et al., 2016). Further limitations include high attrition rates (Chacko et al., 2016) and therapy gains that diminish over time (Lundahl et al., 2006). While PMT is considered one of the “major achievements of the mental health sciences,” these shortcomings have prompted researchers to investigate alternative models (Dadds, 2012, p. 8).

One such model is Collaborative and Proactive Solutions (CPS; Greene & Winkler, 2019). CPS is a cognitive-behavioral model that places emphasis on recognizing cognitive-emotional factors (or “lagging skills”) in a young person, such as emotion dysregulation. These lagging skills create a psychological vulnerability, which, when combined with parent expectations that the child has difficulty meeting, sets the scene for behaviorally challenging episodes. The parent and young person receive training in a problem-solving approach that proactively and collaboratively addresses the “unsolved problem” contributing to challenging episodes, and simultaneously develops these “lagging skills” (Greene & Winkler, 2019).

Promising results have been demonstrated for CPS in two randomized comparison/control trials conducted in the United States comparing CPS to PMT (Greene et al., 2004; Ollendick et al., 2016). In an early study, Greene and colleagues randomly assigned 50 clinically referred families in a psychiatric research setting, with a child aged 4–12 years who met the criteria for ODD, to a CPS or PMT treatment condition. While both treatments resulted in large within-group effect sizes (CPS 1.19; PMT 0.8), there were no significant differences between PMT and CPS from pre- to post-treatment. However, 4-month follow-up results on the maternal-rated ODD Rating Scale (Greene et al., 2004) and Clinical Global Impression-scale showed that 60% of children in the CPS condition demonstrated clinically significant improvement compared with 37% of those in the PMT condition.

A decade later, Ollendick and colleagues (2016) compared these two treatments in a larger and somewhat older sample of youth with ODD in a university research setting. This landmark RCT compared the treatment outcomes of 134 youths, ages 7 to 14 years old, randomized to a waitlist control, CPS, or PMT condition. Both treatment

groups were superior to the waitlist control for treating youth with ODD.¹ At posttreatment, close to 50% of youths in the active groups were free from an ODD diagnosis, and gains continued through 6-month follow-up. Notably, both of the aforementioned studies were limited by attrition, particularly at follow-up (18–46%), and, as noted, both were conducted in research settings.

The current trial examined whether the findings from the [Greene et al. \(2004\)](#) and [Ollendick et al. \(2016\)](#) efficacy trials could be obtained in a real-world clinical setting utilizing a hybrid design that incorporated elements of both an efficacy and an effectiveness trial. Although maximizing internal and external validity by conducting simultaneous efficacy and effectiveness trials may be ideal, in reality, the latter have proven difficult to conduct. Literature reviews have shown that the gold-standard criteria for effectiveness trials, as defined by [Weisz et al. \(clinical referral, therapists employed by clinic, service-oriented setting; 1995\)](#), are rarely met in most studies. This issue presents a particular stumbling block to reaching conclusions about a treatment's generalizability ([Michelson et al., 2013](#)). As a result, an increasing number of hybrid clinical trials have emerged that typically blend randomization with elements of effectiveness designs, including treatment delivery in a community-based setting ([Kanter et al., 2015](#); [Sloan et al., 2016](#)).

The overall aim of this study was to investigate CPS as an alternative treatment option for youth with ODD under these conditions. The first hypothesis was that participants in the CPS and PMT groups, treated in a community setting regardless of therapist and referral characteristics, would exhibit significant improvement in ODD symptomatology and global functioning at post-treatment. Improvements in oppositional symptoms were expected to be maintained at 6-month follow-up. Second, it was hypothesized that the improvement in the CPS group would be equivalent to outcomes in the PMT condition, and that attrition and adherence rates would also be comparable. Third, in line with recent research, we hypothesized that there would be no differences in treatment outcomes related to elements of efficacy and effectiveness design ([Michelson et al., 2013](#)). In all, it was intended that this study would strengthen conclusions about the effectiveness and transportability of CPS by replicating earlier efficacy findings in a community setting.

¹ The waitlist condition in this study ($n = 11$) was discontinued after the first year of the trial for ethical reasons as none of the children improved in this condition.

Method

PARTICIPANTS

Parents of 7- to 14-year-old youths with behavior difficulties were enrolled over a 5-year period, via clinical and community referral. The Center is a community clinic that provides individual and group psychological treatment to 5- to 25-year-olds and is located in North Sydney, Australia. Young people requiring psychological treatment for internalizing and externalizing disorders are typically self-referred or referred by medical practitioners and school counselors. In this study, clinical referrals constituted 55% of the sample, coming from health practitioners and school personnel. The remaining families self-referred in response to media advertisements. An initial 20-minute phone screen assessed whether the young person met the clinical cut-off on the ODD subscale of the Disruptive Behavior Disorder Rating Scale (DBDRS; [Pelham et al., 1992](#)) and provided information regarding the study's procedures. In this initial screen, 232 parents endorsed eligibility criteria. Of those, 192 families attended the Center to complete a comprehensive pretreatment assessment. Study eligibility was determined based on the presence of ODD, which was assessed via parent and youth questionnaires and a structured diagnostic interview (Anxiety Disorders Interview Schedule for DSM-IV, ADIS-IV-C/P; [Silverman & Albano, 1996](#)). If deemed eligible to participate in the study, written consent was obtained according to the UTS Ethics Committee (HREC 2014000159).

[Figure 1](#) provides a summary flow chart of participants through the study. To meet criteria for ODD, the DSM states that "criteria are not met for CD." Thus, potential participants were excluded if they were not fluent in English or they met the full diagnostic criteria for CD and autism spectrum disorder (ASD), developmental delay, substance abuse, or high risk of suicide (note that attention-deficit/hyperactivity disorder [ADHD] was not excluded). The taking of psychotropic medications, prescribed either before or during the study, was permitted, and participants were encouraged to maintain a consistent regime during the trial.

A power analysis, conducted using the *simr* R package ([Green & MacLeod, 2016](#)) with a medium effect size based on a previous clinical trial ($d = .50$), and an alpha of .05, showed that a total sample of 128 participants with two equal-sized groups of $n = 64$ was required to achieve a power of .80. Assuming a 20% dropout rate, we recruited 80 participants per group.

See [Table 1](#) for sociodemographic characteristics. Study participants were assessed at pretreat-

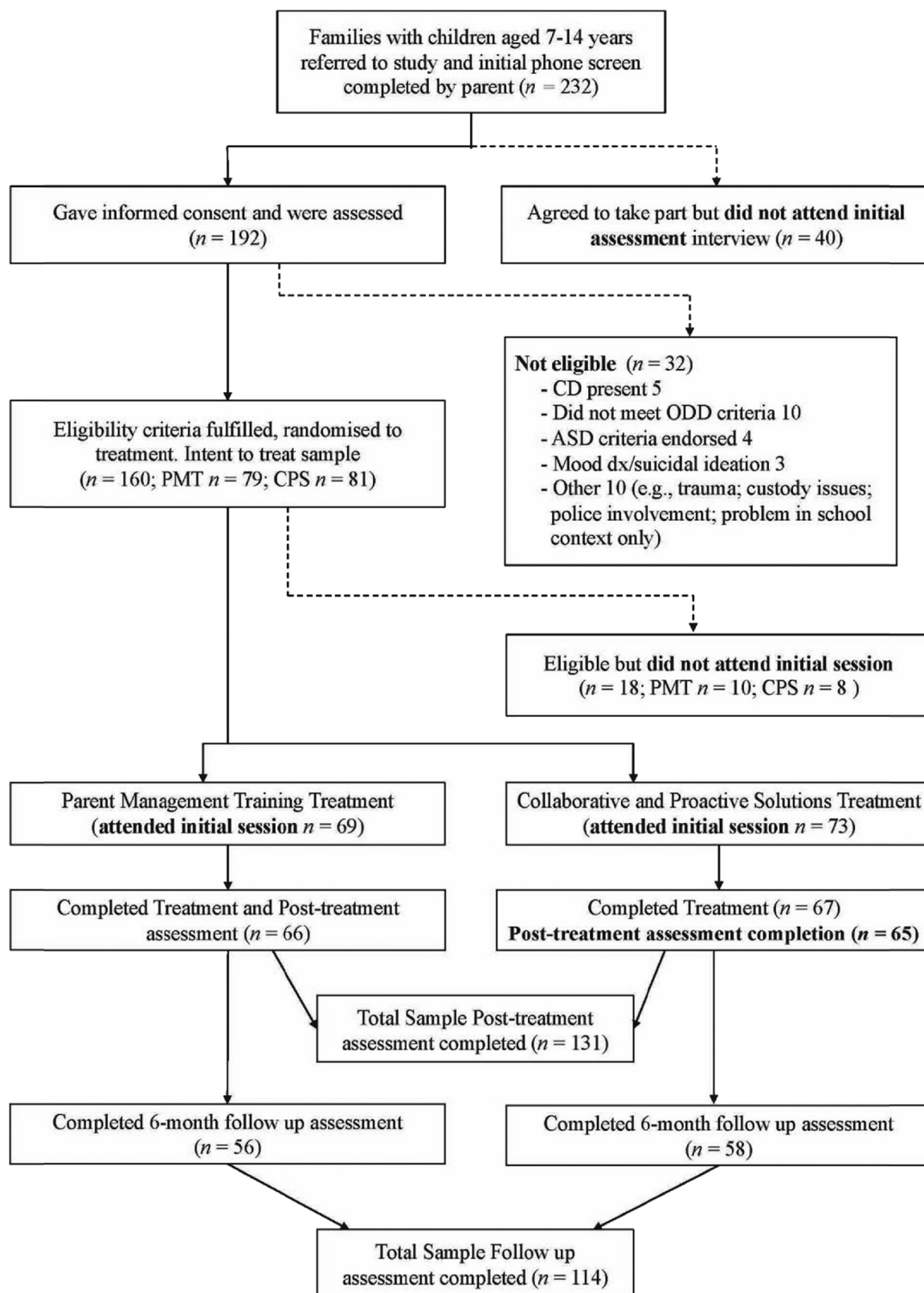


FIGURE 1 Flow Chart of Participants Through the Study.

ment as having “markedly disturbed” levels of behavior problems, according to the ADIS-IV-C/P structured interview (Silverman & Albano,

1996). The mean clinician severity rating (CSR) scores were 6.76 ($SD = .92$) on a scale of 0–8. A primary diagnosis of ODD was present for 81%

Table 1
Sociodemographic Variables and Chi-Square Results for PMT and CPS Groups at Baseline (categorical variables)

Demographic	Total (<i>N</i> = 160) <i>N</i> (%)	PMT (<i>N</i> = 79) <i>N</i> (%)	CPS (<i>N</i> = 81) <i>N</i> (%)	χ^2	<i>p</i>
<i>Gender</i>				1.28	.26
Male	115 (72)	60 (76)	55 (68)		
Female	45 (28)	19 (24)	26 (32)		
<i>Age</i>				1.62	.20
7–9	103 (64)	47 (59)	56 (69)		
10–14	57 (36)	32 (41)	25 (31)		
<i>Ethnicity (mother only)</i>				13.15	.59
Australian	91 (59)	48 (64)	43 (55)		
Asian	10 (6)	3 (4)	7 (9)		
African	7 (5)	4 (5)	3 (4)		
Central/South American	5 (3)	4 (5)	1 (1)		
European (Western, Northern, Southern)	29 (19)	13 (18)	16 (21)		
European (Eastern)	7 (5)	1 (1)	6 (8)		
North America	1 (1)	0 (0)	1 (1)		
NZ/Maori/Pacific Island.	3 (2)	2 (3)	1 (1)		
<i>Family Structure</i>				5.32	.50
Single Parent	20 (13)	13 (17)	7 (9)		
Two Parents	122 (77)	57 (73)	65 (81)		
Other	16 (10)	8 (10)	8 (10)		
<i>Type of School</i>				1.02	.60
Public	57 (35)	28 (35)	29 (36)		
Private	74 (46)	34 (43)	40 (49)		
Catholic	28 (18)	16 (20)	12 (15)		
<i>Mother Education</i>				7.54	.11
University	117 (73)	57 (73)	60 (74)		
High School	19 (12)	14 (18)	5 (6)		
Specialist training	17 (10)	5 (6)	12 (15)		
Less Yr10	3 (2)	1 (1)	2 (3)		
<i>Father Education</i>				6.21	.18
University	109 (68)	55 (70)	54 (67)		
High School	19 (12)	12 (15)	7 (9)		
Specialist training	20 (13)	6 (8)	14 (17)		
Less Yr10	7 (4)	4 (5)	3 (4)		
<i>Income</i>				.005	.99
Up to \$79,999	18 (11)	9 (11)	9 (11)		
\$80,000–\$149,000	44 (28)	22 (28)	22 (27)		
\$150,000+	87 (54)	44 (56)	43 (53)		

Note. PMT = Parent Management Training; CPS = Collaborative & Proactive Solutions; missing data: ethnicity for mothers PMT (*n* = 4), CPS (*n* = 3); type of school for PMT (*n* = 1); mother education for PMT (*n* = 2), CPS (*n* = 2); father education for PMT (*n* = 2), CPS (*n* = 3); income for PMT (*n* = 4), CPS (*n* = 7).

of the participants and was the primary reason for referral for all participants; 13% had ODD as a secondary diagnosis and 6% as a tertiary diagnosis. Of those who did not present with ODD as the primary diagnosis, 49% had ADHD. Almost the entire sample (96%) had at least one comorbid disorder (see Supplemental Table 1).

PROCEDURE

Assessments were conducted with families at pre-, posttreatment, and 6-month follow-up. Prior to the face-to-face assessment interview, the parent (s) and child completed questionnaires using Qual-

trics software (Version 3, 2016). Independent assessors then conducted structured interviews at the clinic (1–2 hours) with separate assessors assessing the parent/s and child (ADIS-IV-C/P; Silverman & Albano, 1996). After completing the assessment, families received a gift voucher of AUD 100 to compensate for their time and travel. Assessments began in May 2014 and extended through May 2019. Assessors were current Masters of Clinical Psychology interns or experienced clinical psychologists practicing at the Center, who completed a 1.5-day training. Diagnostic status and severity rating for two interviews was

required after the training and inter-rater reliability had to reach .90. Assessors were masked to treatment conditions at all three time points. They were also masked to diagnoses and scores at pretreatment and follow-up, but not to diagnoses at posttreatment because of the necessity of checking the young person's progress on disorders identified at pretreatment. Therapists and supervisors did not assess cases in which they were involved as treating or supervising clinicians and were thus masked to this process.

Once determined eligible, families were randomly assigned, using a block randomization procedure (to ensure similar group size), to either PMT ($n = 79$) or CPS ($n = 81$). After the initial assessment, 11% of participants withdrew before commencing treatment, predominantly citing logistical reasons (e.g., timetable clashes or work schedules). Therapists were randomized to treatment conditions. Experienced clinical psychologists from the Center delivered treatment for 50% of families, and intern clinical psychologists saw the remaining 50% as part of their supervised placement program.²

INTERVENTIONS

The parent(s) and young person attended 1-hour weekly treatment sessions for up to 15 weeks, followed by a booster session 2 weeks later. For the 6 months following treatment, participants could access monthly phone support if so desired. Therapist training consisted of a 1-day workshop, watching 40 hours of therapy, and weekly clinical supervision.

Parent Management Training

The PMT condition used a manualized program, *Defiant Children* (2nd ed., Barkley, 1997), with minor modifications by Ollendick et al. (2016). Both parent and child participated in the sessions. Barkley's program comprised a number of core components, including (a) education regarding multifactorial causes of problem behaviors; (b) developing "positive attending" skills; (c) utilizing differential attending to increase compliance; (d) giving effective commands, (e) implementing home reward systems; (f) instruction in "time-out" and response cost; and (g) use of a contingency system. In total, 14 therapists delivered treatment in the

PMT condition, of which 1 was male. Of this group, just under two-thirds were clinical psychologist interns (65%), and one-third were experienced clinical psychologists (35%).

Collaborative and Proactive Solutions

CPS treatment focuses on helping parents identify their child's lagging skills and reframe their perception of their child's behavior using this conceptualization (Greene & Winkler, 2019). From there, the parent(s) and young person identify current "unsolved problems" and are coached in steps to solve the problems collaboratively and proactively. Both parent and child participated in therapy. CPS entails four treatment modules: (a) *psychoeducation and identification of unsolved problems*, which explains the conceptualization of CPS and identifies the unsolved problems precipitating challenging behavior; (b) *prioritizing unsolved problems* based on their relationship to safety, gravity, or frequency; (c) *learning about Plan A, B, and C* and the concept that parents have a choice of how to respond to an unsolved problem; and (d) *clinician modeling and coaching the use of Plan B* to help parents and children solve problems together proactively. A case study illustrating the use of PMT and CPS can be found in Supplemental Table 2. In total, nine female therapists delivered treatment in the CPS condition. Of the clinicians, 64% were experienced clinical psychologists and 36% were clinical psychology interns.

TREATMENT RESPONSE OUTCOME AND REMISSION MEASURES

Treatment Adherence

Adherence to the allocated therapeutic model was assessed by having an independent masked rater, experienced in both therapies, code random audio-taped therapy sessions using the Session Content Analysis checklist (Ollendick et al., 2016). The Session Content Analysis described six therapy techniques, three items prescribed by the therapy, and three items proscribed by that therapy. Ratings obtained for the prescriptive items should be high for the designated therapy (CPS or PMT) and low across the proscriptive items. For example, Item B is "Therapist discussed the specific child characteristics that appear to be underlying the child's problematic behavior." This item should receive a high score on a 5-point Likert scale for CPS therapists and a low score for PMT therapists. By contrast, PMT therapists should score high (and CPS therapists, low) on Item D: "The therapist discussed ways in which parents could reward good behavior and consequate inappropriate behavior."

² Intern clinical psychologists in this study were in the first year of their graduate clinical program (most were on their first or second placement and had seen relatively few clients). Experienced clinical psychologists had 6+ years of experience delivering psychological treatment. A significant difference existed between the two groups regarding years of experience as a psychologist.

The Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions

The ADIS-IV-C/P (Silverman & Albano, 1996) are parallel semistructured interviews used to assess the presence of psychological disorders, symptom severity, and interference in youth. Clinicians interview the parent(s), the young person, and then combine data to determine whether criteria are met for diagnosis (and an associated severity rating score, CSR). The diagnostic cut-off, used as a measure of remission, is met at a CSR of <4 on a scale of 0–8. An ODD interview is only included in the parent version, though it is noted that youth observation contributes significantly to the combined CSR score. Although, historically, the ADIS-IV-C/P has been used for anxiety disorders, research also shows good reliability and validity for externalizing disorders (Anderson & Ollendick, 2012; Ollendick et al., 2016). The reliability of the structured interview diagnoses was evaluated by having an independent rater listen to a random selection of 20% of the recorded interviews, with $\kappa = .65$ for both the primary and secondary ODD diagnoses, indicating an acceptable level of agreement between raters (Cohen, 1960). In addition, Anderson and Ollendick (2012) demonstrated that the ADIS-C/P ODD component had convergent and concurrent validity with gold standard instruments.

Disruptive Behavior Disorders Rating Scale

The DBDRS (Pelham et al., 1992) is a 41-item parent and child questionnaire developed to measure symptoms that reflect DSM-IV criteria for ODD, CD, and ADHD. This study used a version of the DBDRS, revised by Barkley, to assess a young person's behavior (Barkley, 1997). Parents scored each item on a 4-point scale ranging from 0 (*never or rarely*) to 3 (*very often*). Following Barkley's guidelines, each item reaching the threshold score of two or higher is considered an endorsed symptom of ODD, and recoded with a score of one. The DBDRS is scored so that participants either have a score suggestive of a diagnosis of ODD (four or more of the eight ODD items are endorsed), or do not meet criteria (scores of 0–3). The DBDRS has good reliability (in this study, internal consistency $\alpha = .82$; in Ollendick et al., 2016, $\alpha = .90$) and concurrent validity (Harada et al., 2004).

The Clinical Global Impression Scale

The CGI (Guy, 1976) comprises two observer-rated global subscales: the CGI-Improvement scale, a measure of treatment response that assesses global improvement by asking: “*how much has he changed?*” (1 = *very much improved*

to 7 = *very much worse*); and the CGI-Severity scale, a global impression of the severity of illness which asks: “*how impaired is she at this time?*” (1 = *normal* to 7 = *most severely ill*). The CGI has been widely used to research internalizing disorders and ODD (Ollendick et al., 2016; Zaider et al., 2003). It has demonstrated good concurrent validity and sensitivity in detecting treatment responders from nonresponders (Ollendick et al., 2016; Zaider et al., 2003).

Results

STATISTICAL ANALYSES

Baseline differences between the active treatment conditions were compared on key demographic variables and treatment outcomes using chi-square and *t*-test statistics. These baseline characteristics were analyzed using IBM SPSS Statistics for Windows (Version 26.0). All participants randomized to a treatment condition were included in an intent-to-treat analysis (ITT; $N = 160$), regardless of program attendance. Data was missing because participants did not attend assessments or randomly missed completing questionnaire items. Where possible missing data was imputed in SPSS, using multiple imputation, the gold-standard approach for dealing with missing data (Manly & Wells, 2015). Thirty imputed datasets were generated for analysis with the number of imputations to account for the maximum percentage of incomplete cases (Manly & Wells, 2015). Expectation maximization was used for missing data where analyses were undertaken that could not accommodate a multiple imputation approach (i.e., ANCOVA analyses in SPSS and HLM undertaken with HLM software). The statistical significance level set for all analyses was $p < .05$ (one-tailed).

To study the effects of treatment, the primary data analytic tool was Hierarchical Linear Growth Modeling, an advanced regression model for Windows (HLM, Version 8; Raudenbush, 2019). We estimated two sequential models. The unconditional model was initially undertaken, which examined symptom severity change across time, with separate analyses undertaken for the DBDRS and the ADIS CSR. The unconditional model for each outcome measure was then compared to a predictor model, which included the addition of the intervention (CPS vs. PMT) and the covariates of sex and age to determine whether the full predictor model better fit the data. Three-way interactions were also examined for time, treatment group, and age, as well as for time, treatment group, and sex. Although a quadratic model was

tested, this was not found to be a better fit than the linear growth model and so will not be discussed further. The CGI-S was obtained at two time points (pretreatment and posttreatment), and the CGI-I at posttreatment only. Thus, ANCOVA and chi-square statistics were used to analyze within and between-group differences for these measures with the pretreatment score added into the model as a covariate to adjust for the nested nature of the data.

In addition to traditional null hypothesis significance testing, equivalence testing was conducted to enable conclusions about group comparability (Rogers et al., 1993). A two one-sided *t*-test (TOST) examined whether differences between treatments were too small to be considered practically meaningful. Based on the smallest effect size found in Ollendick et al. (2016), Cohen's *d* = 0.6 was the smallest effect size of interest in the current study. Therefore, a significant equivalence test indicates an effect size of *d* < 0.6. Secondary analyses were conducted using HLM and equivalence testing on clinician experience and referral source.

SOCIODEMOGRAPHIC AND PARTICIPANT CHARACTERISTICS

Table 1 shows the demographic characteristics of the research sample at the pre-intervention phase for each treatment condition. The two active conditions, PMT and CPS, did not differ significantly with regards to baseline sociodemographic characteristics (see Table 1). In addition, no significant

differences were found between the participants in the two conditions with regard to pretreatment clinical severity (see Table 2 for ADIS CSR means and standard deviations, $t(19) = 0.22$, $p = .83$).

ATTRITION

Of the 160 families randomized to treatment, 18 did not attend the first session (11%; see Figure 1). Treatment completion was classed as seven sessions undertaken, with families having received the basic requisite skills in these first seven sessions. Six percent of families who commenced treatment dropped out before completion (3 PMT families and 6 CPS families). Altogether, 133 families went on to meet the criteria for a completed treatment (PMT = 66 families; CPS = 67 families), and were seen for approximately 14 sessions ($M = 13.61$, $SD = 2.34$, range = 7–19 [missing data $N = 2$]). For clinical reasons, five families attended more than the 16 sessions offered in the trial. An analysis of the treatment dosage in the two active conditions showed no significant differences (PMT: $M = 12.64$, $SD = 2.67$; CPS: $M = 13.44$, $SD = 3.60$; $t(138) = -1.49$, $p = .14$).

PMT vs. CPS

Except for two CPS families, all of the completer families attended the posttreatment assessment ($n = 131$). At the 6-month follow-up, 15% of the PMT completer families ($n = 10$) and 13% of the CPS completer families ($n = 9$) did not return for

Table 2
Means, Standard Deviations and Within-Group Effect Sizes for Treatment Response Outcome Measures at Each Time Point

Condition	Descriptive	Time point		
		Pre-treatment ($N = 160$)	Post-treatment ($N = 160$)	6-month follow-up ($N = 160$)
ADIS CSR ODD				
PMT	Mean (<i>SD</i>)	6.77 (1.01)	3.77 (2.26)	3.69 (2.1)
	Hedges' <i>g</i>		1.89	1.83
CPS	Mean (<i>SD</i>)	6.74 (.83)	4.13 (2.19)	3.49 (2.1)
	Hedges' <i>g</i>		1.68	1.91
DBDRS				
PMT	Mean (<i>SD</i>)	5.03 (.21)	2.82 (2.31)	2.80 (2.56)
	Hedges' <i>g</i>		.98	1.04
CPS	Mean (<i>SD</i>)	5.36 (2.07)	3.37 (2.44)	2.99 (2.56)
	Hedges' <i>g</i>		.79	.88
CGI-S				
PMT	Mean (<i>SD</i>)	5.24 (.99)	2.94 (1.67)	
	Hedges' <i>g</i>		1.55	
CPS	Mean (<i>SD</i>)	4.95 (1.12)	3.49 (1.61)	
	Hedges' <i>g</i>		1.05	

Note. Raw data used for above calculations; PMT = Parent Management Training; CPS = Collaborative and Proactive Solutions; ADIS CSR ODD = Anxiety Disorders Interview Schedule, Clinician Severity Ratings, Oppositional Defiant Disorder; DBDRS = Disruptive Behavior Disorder Rating Scale; CGI-S = Clinical Global Impression – Severity.

assessment. Families who did not attend the follow-up assessment cited difficulties such as competing commitments or child refusal to attend. Some other families could not be reached by the assessors after three attempts. Chi-square analyses indicated that there was no significant difference in attrition between the PMT and CPS conditions at pretreatment, $\chi^2(1, N = 160) = 0.25, p = .61$, post-treatment, $\chi^2(1, N = 160) = 0.12, p = .73$, or follow-up, $\chi^2(1, N = 160) = 0.10, p = .92$.

Completer vs. Noncompleter

Results showed no differences between the 27 youth who dropped out (after randomization and before session 7) and those who completed treatment on pretreatment variables, including the severity of behavior problems: ADIS CSR $\chi^2(4, N = 160) = 3.37, p = .50$.

Experienced Clinical Psychologists vs. Clinical Psychology Interns

No difference in attrition rates by treatment type and therapist's experience were found $\chi^2(3, N = 142) = 0.41, p = .41$.

TREATMENT ADHERENCE

All sessions were audio-recorded, and independent expert raters coded two randomly selected sessions from 13% of the total cases to assess treatment adherence (details of these results are provided in Supplementary Table 13). Results suggest that PMT and CPS conditions were implemented with fidelity and without cross-therapy contamination.

TREATMENT RESPONSE

Descriptive statistics for treatment outcomes, across the three treatment outcome measures (ADIS CSR, DBDRS, and CGI-S), by treatment condition at pretreatment, posttreatment, and 6-month follow-up can be seen in Table 2.

ADIS CSRs

The CSR mean scores for the two active treatment groups were similar at posttreatment, with PMT showing slightly more symptomatic improvement than CPS (M difference = 0.36, see Table 2 for raw M 's and SD scores). Both groups maintained these gains over the follow-up period, with CPS mean scores improving a further 0.64 points, compared to 0.08 points in the PMT condition. Within-group effect size values (Hedges's g) for both groups were found to exceed convention for a large effect at posttreatment and follow-up (see Table 2; Cohen, 1960). While effect sizes for PMT remained constant between posttreatment and follow-up, effect sizes for CPS increased between the two time points from 1.68 to 1.91.

The unconditional HLM revealed a treatment effect across time points ($p < .001$), indicating significant decreases in CSRs at posttreatment and follow-up (see Table 3). Table 3 also displays the results of the predictor model. Likelihood ratio tests indicated that the unconditional model fit the data better than the predictor model (see Table 3 for model comparisons). There was no significant difference in CSR scores across treatment groups over time. Controlling for sex and age had no significant impact on treatment outcomes across the two treatment conditions (see Supplemental Table 3 for full predictor model) and no three-way interaction was observed with regard to time, treatment group and age, or time, treatment group and sex. The growth trajectory of youth behavior problems in both treatment groups showed an equivalent linear rate of decrease in youth behavior problems (see Supplemental Figure 1). Equivalence testing findings indicated that the PMT and CPS groups were comparable at posttreatment and follow-up (see Supplemental Table 5). Taken together, these results indicate that significant improvement in CSR scores occurred over time in both groups and that no clinically important difference exists between the two treatment groups, regardless of age or sex.

DBDRS

Mean scores are marginally lower in the PMT group than the CPS group at posttreatment; however, this gap narrows by follow-up (M difference = 0.19; see Table 2 for raw M 's and SD 's). Within-group effect sizes are large for both PMT and CPS conditions at posttreatment and follow-up (see Table 2). The unconditional HLM revealed a treatment effect across time points ($p < .001$), indicating significant decreases in DBDRS scores between pre- and posttreatment, and pre-treatment and follow-up (see Table 4). Table 4 also displays the results of the predictor model. Likelihood ratio tests indicated that the unconditional model fit the data better than the predictor model (see Table 4 for model comparisons). In line with these findings, there was no significant difference in presenting symptoms across treatment groups over time for the DBDRS. Controlling for sex and age made no significant impact on treatment outcomes across the two treatment conditions (see Supplemental Table 4 for full predictor model) and no three-way interaction was observed with regard to time, treatment group and age, or time, treatment group and sex. The trajectory of parent-reported ODD symptoms (DBDRS) across both treatment groups showed an equivalent linear rate of decrease (see Supplemental Figure 1).

Table 3
Unconditional Model, Predictor Model and Model Comparisons for the ADIS CSR ODD

<i>Unconditional Model</i>					
Fixed effect	Coefficient	SE	<i>t</i>	<i>df</i>	<i>p</i>
For base rate, β_0					
Intercept, γ_{00}	6.398	.106	60.279	159	<.001
For Timepoint slope, β_1					
Intercept, γ_{10}	-1.585	.110	-14.435	159	<.001
Random effect					
INTRCPT1, u_0	.320	.102	86.418	131	>.500
Timepoint slope, u_1	.720	.518	152.544	131	.096
level-1, <i>r</i>	1.401	1.964			
<i>Predictor Model</i>					
Fixed effect	Coefficient	SE	<i>t</i>	<i>df</i>	<i>p</i>
For base rate, β_0					
Intercept, γ_{00}	6.266	.441	14.045	156	<.001
Therapy, γ_{01}	.159	.214	.746	156	.457
For Timepoint slope, β_1					
Intercept, γ_{10}	-1.061	.467	-2.274	156	.024
Therapy, γ_{11}	-.047	.221	-.214	156	.830
Random effect					
INTRCPT1, u_0	.316	.100	84.883	128	>.500
Timepoint slope, u_1	.726	.527	149.840	128	.091
Level-1, <i>r</i>	1.406	1.977			
<i>Model Comparisons</i>					
Model Adjustment	Unconditional		Predictor		
Deviance (-2*LL)	1571.19		1581.08		
Number of parameters	4		4		
Parameter difference	-		0		
χ^2 statistic	-		9.89		

Note. ADIS CSR ODD = Anxiety Disorders Interview Schedule, Clinical Severity Rating, Oppositional Defiant Disorder; LL = log-likelihood.

Equivalence testing revealed that the PMT and CPS groups yielded comparable DBDRS scores at each time point (see equivalence table). Based on the traditional null hypothesis test and the equivalence test combined, we can conclude that the observed effect is not significantly different from zero and is statistically equivalent to zero (see Supplemental Table 5).

CGI-S

When controlling for age, sex and the pretreatment score, the results of the ANCOVA for the CGI-S demonstrated a significant main effect of Treatment, $F(1, 156) = 5.48, p = .021$. Means demonstrate that PMT ($M_{pre} = 5.24$ [SD = 0.99], $M_{post} = 2.94$ [1.67]) had superior outcomes compared with CPS ($M_{pre} = 4.95$ [1.12], $M_{post} = 3.49$ [1.61]; see Table 2 for raw *M*'s). The growth trajectory presented in Supplemental Figure 1 also showed that the PMT group

had a greater initial linear decrease than CPS, and that the PMT treatment was marginally superior to the CPS treatment. Equivalence testing for the CGI-S was not significant (see Supplemental Table 5). Thus, both the traditional null hypothesis test and the equivalence test combined demonstrated a clinically important difference between the two treatment groups, as PMT was superior to CPS for improving clinician-rated global functioning.

SECONDARY ANALYSIS: EFFICACY VS. EFFECTIVENESS CHARACTERISTICS

Interns vs. Experienced Clinical Psychologists and Community vs. Clinical Referrals

Descriptive statistics for treatment outcomes across two measures (ADIS CSR and DBDRS) for clinical experience and referral source is provided in Supplemental Table 6. Aside from age of participants, no differences at baseline on

Table 4
Unconditional Model, Predictor Model and Model Comparisons for the DBDRS

<i>Unconditional Model</i>					
Fixed effect	Coefficient	SE	<i>t</i>	<i>df</i>	<i>p</i>
For base rate, β_0					
Intercept, γ_{00}	5.009	.162	30.922	155	<.001
For Timepoint slope, β_1					
Intercept, γ_{10}	-1.414	.134	-10.543	155	<.001
Random effect	SD	Variance component	χ^2	<i>df</i>	<i>p</i>
INTRCPT1, u_0	1.022	1.045	149.859	125	.064
Timepoint slope, u_1	.585	.342	139.218	125	.182
Level-1, r	1.851	3.427			
<i>Predictor Model</i>					
Fixed effect	Coefficient	SE	<i>t</i>	<i>df</i>	<i>p</i>
For base rate, β_0					
Intercept, γ_{00}	5.395	.664	8.119	152	<.001
Therapy, γ_{01}	.335	.320	1.048	152	.296
For Timepoint slope, β_1					
Intercept, γ_{10}	-1.502	.563	-2.666	152	.009
Therapy, γ_{11}	.117	.271	.431	152	.667
Random effect	SD	Variance component	χ^2	<i>df</i>	<i>p</i>
INTRCPT1, u_0	.966	.934	135.680	122	.188
Timepoint slope, u_1	.623	.388	136.874	122	.169
Level-1, r	1.842	3.392			
<i>Model Comparisons</i>					
Model Adjustment	Unconditional		Predictor		
Deviance (-2*LL)	1719.18		1718.18		
Number of parameters	4		4		
Parameter difference	-		0		
χ^2 statistic	-		1.00		

Note. DBDRS = Disruptive Behavior Disorders Rating Scale; LL = log-likelihood

sociodemographic variables were observed between interns and experienced psychologists (see Supplemental Tables 7–8). Age was controlled for in the analyses to account for this baseline difference. We explored clinician experience and referral source as predictors of treatment outcomes in sensitivity analyses. These analyses involved adding these variables as main effects, while controlling for age, sex and treatment type, to the full model. The HGLM model revealed no main effect for clinician experience (CSR; $\beta = -.017$, $t = .071$, $p = .94$; DBDRS; $\beta = .27$, $t = .93$, $p = .36$), or for type of referral (CSR: $\beta = .053$, $t = .23$, $p = .82$; DBDRS; $\beta = .21$, $t = .71$, $p = .46$) across time points (see Supplemental Tables 9–12). No significant three-way interaction was observed with regard to time, treatment group and clinician experience or for time, treatment group and referral source. The growth trajectory for clinician experience

and referral source showed an equivalent linear rate of decrease between efficacy versus effectiveness features (see Supplemental Figure 1). Equivalence testing revealed that the intern clinical psychologist versus experienced clinical psychologist groups yielded comparable CSR, DBDRS and CGI-S scores at each time point. Mean scores on these measures were also shown to be equivalent for the community referred versus the clinical referred group at posttreatment and follow-up (see Supplemental Table 5)

When controlling for pretreatment score, age, sex and the treatment type, the results of the ANCOVA for the CGI-S for clinician experience, $F(2, 156) = 1.322$, $p = .270$, and referral source, $F(1, 156) = 6.56$, $p = .419$, were not significant. Altogether, these results indicate no significant differences in outcomes by clinician experience or referral sources.

TREATMENT REMISSION

Remission was determined by receiving a score below the diagnostic cut-off for ODD on the ADIS CSR scale ($CSR < 4$), and/or a rating of much improved (score of 1) or very much improved (score of 2) on the CGI Improvement scale (see Table 5). Overall, at posttreatment, on the ADIS CSR, 40–50% of cases were diagnosis-free with results revealing PMT had 10% more diagnosis-free cases than CPS. Both groups maintained gains at follow-up, with CPS showing an additional 5% improvement. No statistically significant differences were observed between the treatment groups posttreatment or follow-up (see Table 5). Results from the CGI-I demonstrated that approximately 60–70% of participants were considered much or very much improved following treatment. Again, differences between the treatment groups did not reach statistical significance (see Table 5).

Discussion

In the current hybrid efficacy/effectiveness study, we aimed to extend outcomes from two earlier RCTs (Greene et al., 2004; Ollendick et al., 2016), which found CPS to be an efficacious treatment for ODD on par with PMT, and explore these findings in a community-based setting. By adding effectiveness components, this study builds on previous research, addressing concerns about the “ivory tower” nature of efficacy research, and increasing the study’s representativeness to real-life participants, therapists, and settings. To our knowledge, this is the first randomized trial conducted in a routine community clinic that seeks to compare the effects of CPS, an innovative therapy, to the well-established gold-standard treatment, PMT, for youth with ODD.

Our primary hypothesis that participants in both CPS and PMT treatment groups would exhibit statistically significant improvement in ODD symptoms following treatment was confirmed. So, too, was the prediction that these gains would remain stable over the follow-up period. On aver-

age, participants in the PMT and CPS groups moved from the “markedly disturbed” category at baseline on the ADIS to below the ODD diagnostic cut-off at 6-month follow-up. These outcomes, drawn from a comprehensive, structured diagnostic interview with two independent assessors, parent-rated DBDRS, and clinician-ratings of global functioning suggest that both CPS and PMT can be used to effectively treat oppositional youth in an established community clinic.

Researchers working towards developing criteria for the American Psychological Association’s empirically supported psychological treatments (Chambless & Ollendick, 2001) have emphasized the importance of measuring the clinical significance of participant outcomes in research trials (also see Tolin et al., 2015). Treatment remission measures, including the ADIS structured interview, and the CGI illness severity and global improvement scales, provide useful information about clinically relevant outcomes. In the current study, clinically meaningful improvement was observed on the CGI-S, as participants were found to shift from a baseline of “markedly ill” to “mildly ill” at posttreatment. In addition to the clinically significant improvement on the CGI-S, the ADIS assessment also demonstrated that approximately 50% of ODD youth in this study were diagnosis-free at 6-month follow-up (CPS = 45%; PMT = 52%), with no statistical difference between the two groups. Correspondingly, findings from the clinician-rated global improvement scale (CGI-I) indicated that two-thirds of youth were “much or very much” improved following both treatments. Another important indicator of the clinical significance of treatment effects is the magnitude of the effect size in each of our active treatment groups. Our study showed that treatment effect sizes achieved by CPS and PMT for improving oppositional symptoms were large on all three measures at posttreatment (ADIS CSR: PMT $g = 1.89$; CPS $g = 1.68$) and follow-up (PMT $g = 1.83$; CPS $g = 1.91$). The large effect sizes observed underline the practical significance of both CPS and PMT treatments. Indeed, on all clinical significance measures, a large proportion of youth with ODD experienced meaningful improvement.

Notwithstanding these positive findings, it is noteworthy that half of the sample did retain a clinical diagnosis of ODD following treatment. These results are important to address, as they are consistent with earlier RCTs that compared PMT and CPS treatment (Greene et al., 2004; Ollendick et al., 2016). Albeit speculative, we suggest that the severity of symptoms at pretreatment

Table 5
Treatment Remission and Chi-Square Results by Treatment Condition (PMT vs. CPS)

Measure	PMT N (%)	CPS N (%)	χ^2	p
ADIS CSR ODD <4				
Post-treatment	33 (50)	26 (40)	1.5	.22
Follow-up	29 (52)	26 (45)	.55	.46
CGI-I				
Post-treatment	45 (69)	38 (59)	1.63	.20

Note. ADIS CSR ODD = Anxiety Disorders Interview Schedule, Clinical Severity Rating Oppositional Defiant Disorder, CGI-I = Clinical Global Impression – Improvement.

(i.e., 91.3% of the sample scored 6 or above on the ADIS) may have contributed to these outcomes as the samples were severely impaired prior to treatment. Moreover, subgroups of participants with ODD, such as those with callous-unemotional traits, who have demonstrated poorer treatment outcomes, may have had an impact (Murrihy et al., 2010). Identifying these participants and working to improve their outcomes is important. In addition, for some families, the treatment timeframe of 3–4 months may be an unrealistic expectation to observe change, especially when parenting practices and behavior patterns are longstanding. In these circumstances, an extended treatment dosage may be indicated (Sanders, 1999). Other possibilities might be to adopt modular approaches, in which adjunctive components, for example, social skills training or parental emotional regulation, are added flexibly to achieve a personalized treatment protocol (Ng & Weisz, 2016).

Our second hypothesis, that improvement in ODD symptomatology following CPS treatment would be equivalent to those outcomes observed in the PMT condition, was also supported. Outcome measures, including assessor-rated structured interviews and parent-rated symptom checklists, revealed no statistically significant difference between the CPS and PMT groups, at post-treatment or follow-up. Moreover, group equivalency tests on the ADIS and DBDRS indicate that CPS and PMT treatments are comparable. There was one unexpected result, however, with participants in the PMT condition outperforming those in the CPS condition between pre- and posttreatment on one of the clinician-rated measures of global functioning that examined severity of impairment (CGI-S). Paradoxically, a second clinician-rated measure of *global improvement* (CGI-I) did not support a difference between the two treatment groups. One might contend that the CGI-S, with two assessment timepoints (pre, post) rather than one (CGI-I, post-only), avoids retrospective bias and can thus be treated as a more reliable finding. One possibility for this group difference on the CGI-S is that the global score incorporates ODD symptoms and other symptomatology. Barkley's PMT protocol was developed to treat comorbid ODD and ADHD. Perhaps PMT fared better in global ratings of impairment because it also impacted ADHD symptoms such as impulsivity. Further research that replicates this finding and examines global impairment at follow-up would be of benefit to clarify the transdiagnostic effects of PMT and CPS on comorbid presentations.

Findings indicated that youth in the PMT condition showed a faster decrease in ODD symptoms between pre- and posttreatment. Interestingly, this trend reversed from posttreatment to 6-month follow-up, with CPS youth improving to a greater extent than PMT, ultimately closing the gap. It would be of benefit to investigate both aspects of this finding further. Specifically, could PMT lead to a more rapid response and therefore require a briefer length of treatment overall? Or perhaps CPS has a sleeper effect, where improvement is more gradual and might continue beyond the 6-month follow-up period?

Altogether, these results have confirmed findings from two earlier RCTs (Greene et al., 2004; Ollendick et al., 2016) that examined the effects of CPS compared to PMT interventions in youth with ODD. Importantly, CPS and PMT were both found to be effective treatments. Attrition rates were comparable, and the two treatments worked equally well to reduce ODD symptoms in youth, extending to 4–6 months after treatment (based on ADIS ODD, in both Ollendick et al., 2016 and the current study; and ODD Rating Scale [ODDRS] in Greene et al., 2004).

The equivalent outcomes found for CPS and PMT in this study are striking given that, conceptually, they derive from very distinct rationales. For example, in PMT, the parent is thought to be the primary change agent, working to implement positive strategies to encourage prosocial behavior (praise, attention) and consistent and proportional contingencies to counter undesirable behavior (Barkley, 1997). In contrast, CPS primarily incorporates child characteristics into its etiological model. Changing a parent's viewpoint to focus on lagging skills in the child builds empathy and removes the need for negative parenting practices (Greene & Winkler, 2019). In addition, the collaborative relationship developed between parent and child, as they negotiate the problem-solving process, is considered an active ingredient of change in CPS (Greene & Winkler, 2019).

One possibility for integrating these findings and identifying the active ingredients of change is to examine purported change pathways of PMT and CPS through mediational and component analyses (Kaminski et al., 2008; Maric et al., 2015). Mediators of CPS treatment pathways are yet to be explored; however, a preliminary study is planned for a secondary analysis of this dataset (Dedousis-Wallace et al., 2022). Due to the ubiquitous nature of PMT, most of the mediator literature has focused on changes in parenting practices (Forehand et al., 2014). More specifically, tentative support has been found for changes

in oppositional symptoms being mediated by increases in discipline (e.g., appropriate, consistent) and, to a lesser extent, reductions in negative parenting (e.g., harshness, criticism) and increases in positive parenting (e.g., praise, effective communication; see [Forehand et al., 2014](#), for review; [Rimestad et al., 2020](#); [Seabra-Santos et al., 2016](#)). It should be noted, however, that the research is mixed as approximately half of the studies on mediators of parental practices reviewed do not show positive findings ([Forehand et al., 2014](#)). While it appears that parenting practices play a role as mediators of behavior change, and potentially constitute an active ingredient of change for youth with challenging behaviors, more remains to be understood. The next step forward is to overcome the methodological problems inherent in the sequencing of data collection ([Maric et al., 2015](#)) and move beyond the global dimensions of parenting and explore specific hypothesized change mechanisms ([Maric et al., 2015](#)). For CPS, this might include examining key etiological mechanisms such as lagging skills and the quality of the parent-child relationship as mediators for behavior change.

Another pathway from which to derive data that contributes to an understanding of active ingredients of change is to examine specific therapy components that lead to effective outcomes ([Leijten et al., 2021](#)). A meta-analysis of parent training programs for child behavior problems (including PMT) has identified components, such as teaching parents to interact positively with their child and supporting skills acquisition in session via active learning (augmented by in vivo practice), as being associated with larger treatment effects than programs without these components ([Kaminski et al., 2008](#)). A clear next step for the research is to identify if these components are related to greater effect sizes in PMT and CPS (see [Leijten et al., 2021](#), for review).

In line with our third hypothesis, we found no differences in treatment outcomes associated with efficacy and effectiveness features in this study. Despite expectations by some researchers (see [Weisz et al., 2009](#)) that specialized research therapists/graduate interns (efficacy feature) would outperform experienced therapists (effectiveness feature), this was not the case. So, too, the method by which clients were referred did not impact treatment outcomes. It has been argued that participants referred by health workers (effectiveness studies) would have greater comorbidity and complexity, and poorer outcomes, than those referred through the media or community ([Weisz & Jensen, 1999](#)). No evidence was found to support

this assumption. This study strengthens results from an earlier meta-analysis that showed that the mode of referral does not impact the effect of PMT or the type of therapist employed (see [Michelson et al., 2013](#)). Moreover, these results build upon earlier efficacy studies ([Greene et al., 2004](#); [Ollendick et al., 2016](#)) by extending the positive findings for PMT and CPS to a community-based setting that included effectiveness features.

Although there is a view that older children may benefit less from PMT than younger children and that older children might benefit more from CPS than younger children (see [Barkley, 1997](#), and [Greene et al., 2004](#)), this research did not find this to be the case. [Ollendick et al. \(2016\)](#) and the current study constitute important findings from a clinical perspective because they suggest that neither age nor sex significantly impacted treatment outcome.

The current study's strengths include randomization, a large sample size ($N = 160$), enabling greater power, acceptable inter-rater reliability, adequate treatment adherence, highly trained clinicians, validated assessment instruments and an ethnically diverse and representative sample ([Australian Bureau of Statistics \[ABS\], 2020](#)). Most important, the current study builds upon [Ollendick et al.'s](#) efficacy trial (2016) by extending their findings to a community setting that includes elements of effectiveness studies. As stated in the introduction, replicating outcomes is necessary, and extending delivery to community settings is essential to ensure treatment generalizability ([Tolin et al., 2015](#)). The inclusion of a 6-month follow-up period is another important strength of this study. There is some disagreement in the literature about whether improvements from PMT treatments are maintained over time ([Kaminski & Claussen, 2017](#); [Lundahl et al., 2006](#)). Thus, it was imperative for this study to investigate the stability of both CPS and PMT outcomes. We found that consistent with expectations and in line with two previous RCTs ([Greene et al., 2004](#); [Ollendick et al., 2016](#)), gains made in both treatments were generally maintained between post-treatment and 6-month follow-up.

Limitations to the present study are important to consider. These include the omission of a TAU group, exclusion of youth with CD, ASD, developmental delay, high suicidality and substance abuse, and an unequal ratio of experienced clinical psychologists across treatment conditions. Although more experienced clinical psychologists delivered treatment in CPS than in PMT, this was mitigated by the fact that both interns and experienced therapists were delivering these specific therapies for

the first time. Failure of some participants to attend post- and follow-up assessments was an anticipated shortcoming and represented a threat to randomization and statistical power (Chacko et al., 2016). Of the families randomized to treatment, 18% did not attend postassessment, and 28% did not complete the 6-month follow-up. To mitigate this, rigorous statistical procedures were used to ensure that outcomes were representative of the full sample. Moreover, analyses confirmed that those families who completed treatment did not differ from noncompleters on baseline variables, thereby indicating group comparability at the study outset. It should be emphasized that dropout in this population, which occurs both before treatment commences and during treatment, has been recognized as a significant problem in the literature and would benefit from greater research attention (Chacko et al., 2016).

Another limitation may be related to the representativeness of the families enrolled in this study. Two-thirds of the parents in this study had attained university degrees, and half earned over USD 101,000/annum. Almost half of the young people in this sample attended private schools. Despite this, no differences at baseline on income level between the two treatment groups were observed. Demographic data reassuringly shows that the study sample's income, education, and schooling levels match the typical clientele for a clinic in this region (ABS, 2016). To further address this potential limitation, we explored the relationship between income brackets and treatment outcomes. Barring the CGI-I, there were no differences in treatment outcomes due to income brackets. Although it is possible that those in the highest bracket would evidence greater change due to fewer social stressors and more available resources (Leijten et al., 2013; Lundahl et al., 2006), this was not the case here. That said, it will be imperative for future CPS research to test socioeconomically and culturally diverse samples.

An important question that remains to be answered is for whom and under which circumstances a clinician might implement CPS or PMT. Given the differences in PMT and CPS treatments, we would speculate that moderators likely exist that could act as guides to clinical decision-making. A wide range of possible moderators have been implicated, including child and family factors (e.g., age, maternal depression), intervention characteristics (e.g., components, dosage), and wider-system factors, such as financial disadvantage (Dedousis-Wallace et al., 2021, 2022). There remains much to be investigated, and no published

research has directly compared moderators of PMT and CPS (although this will be examined in a secondary analysis of this dataset). Looking at moderators of PMT alone, the small number of studies undertaken, and the lack of consistent findings, render conclusions difficult to reach (see: Dedousis-Wallace et al., 2021, for review). Unraveling moderators by examining variables both conceptually related to CPS and PMT, or empirically associated with response to these treatments, constitutes the next step in research (Dedousis-Wallace et al., 2021). Specifically, it will be important for future research to focus on delineating moderators that help guide clinical decision-making. "Lagging skills" are potential moderators of interest that, if found to differentiate PMT and CPS treatment, could be used to guide personalized treatment allocation. In the CPS model, a child's "lagging skills" (i.e., cognitive-emotional deficits) are thought to be the main cause of behavioral challenges, and CPS is hypothesized to indirectly improve lagging skills through engagement in the problem-solving process (Greene & Winkler, 2019). If, in line with this hypothesis, it was found that youths presenting with higher levels of lagging skills responded better to CPS than PMT, clinicians might direct families accordingly. A final suggestion to aid clinical decision-making is to better understand therapist and family preferences for treatment, which relates to the goodness of fit between therapist, family, and treatment (Dedousis-Wallace et al., 2022). Parents tend to choose strategies in line with their philosophies and experience (Rahmqvist et al., 2014). Future research might consider if families are more likely to engage and adhere to treatment if they are philosophically aligned with treatment (see Ollendick et al., 2016).

Last, CPS can be disseminated to community-based mental health practitioners in much the same way as has been achieved with PMT. Interested practitioners working in child psychology can attend training through Lives in the Balance, a not-for-profit organization with certified trainers globally. Training includes didactic instruction coupled with a supervision period. In Australia, PMT has been disseminated widely with the support of government funding (see Triple P; Sanders, 1999); with similar input, CPS could be disseminated at scale.

CONCLUSIONS

To conclude, results from the present study demonstrate that CPS is as effective as the gold-standard PMT in reducing symptoms and enacting clinically meaningful change in youth with ODD

when delivered in a community setting. Thus, CPS has the potential to be offered as a therapeutic alternative for families who are nonresponders to PMT, families not accepting of the PMT treatment model or rationale, or who are more philosophically disposed to the CPS treatment rationale. Given CPS requires the same length of time for clinician training as PMT, and an equivalent dosage, it appears to represent a feasible option for treating 7- to 14-year-olds with ODD in a community setting. Future studies should consider two critical but unanswered questions given the comparable success of both treatments: first, what are the underlying mechanisms of change (i.e., mediators), and are they independent, or do they have some degree of overlap within treatments? Second, what characteristics of youth and families might be identified that preferentially respond to the respective treatments (i.e., moderators)?

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References

- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi.books.9780890425596>.
- Anderson, S. R., & Ollendick, T. H. (2012). Diagnosing oppositional defiant disorder using the Anxiety Disorders Interview Schedule for DSM-IV: Parent version and the diagnostic interview schedule for children. *Journal of Psychopathology and Behavioral Assessment*, 34(4), 467–475. <https://doi.org/10.1007/s10862-012-9294-5>.
- Australian Bureau of Statistics (ABS, 2016). *Data by region*. Retrieved February 20, 2020, from <https://www.abs.gov.au/>.
- Australian Bureau of Statistics (ABS, 2020). *Cultural diversity in Australia, 2016*. <https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by+Subject/2071.0~2016~Main+Features~Cultural+Diversity+Article~60>.
- Barkley, R. A. (1997). *Defiant children: A clinician's manual for assessment and parent training* (2nd ed.). Guilford Press. https://doi.org/10.1111/camh.12073_4.
- Boylan, K., Vaillancourt, T., & Szatmari, P. (2012). Linking oppositional behavior trajectories to the development of depressive symptoms in childhood. *Child Psychiatry & Human Development*, 43(3), 484–497. <https://doi.org/10.1007/s10578-011-0277-7>.
- Burke, J. D., Derella, O. J., & Johnston, O. G. (2018). Diagnostic issues in oppositional defiant disorder. In J. E. Lochman & W. Matthys (Eds.), *The Wiley Handbook of Disruptive and Impulse-control Disorders* (1st ed., pp. 21–36). Wiley. <https://doi.org/10.1111/j.1469-7610.2005.00422.x>.
- Chacko, A., Jensen, S., Lowry, L., Cornwell, M., Chimklis, A., Chan, E., Lee, D., & Pulgarin, B. (2016). Engagement in behavioral parent training: A review of the literature and implications for practice. *Clinical Child and Family Psychology Review*, 19(3), 204–215. <https://doi.org/10.1007/s10567-016-0205-2>.
- Chambless, D. L., & Ollendick, T. H. (2001). Empirically supported psychological interventions: Controversies and evidence. *Annual Review of Psychology*, 52, 685–716. <https://doi.org/10.1146/annurev.psych.52.1.685>.
- Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, 20(1), 37–46. <https://doi.org/10.1177/00131644600200014>.
- Colalillo, S., & Johnston, C. (2016). Parenting cognition and affective outcomes following parent management training: A systematic review. *Clinical Child and Family Psychology Review*, 19(3), 216–235. <https://doi.org/10.1007/s10567-016-0208-z>.
- Dadds, M. (2012). Helping troubled children: Seven things you should know about the origins of mental health disorders. *InPsych*, 34(3), 8–11.
- Dedousis-Wallace, A., Drysdale, S. A., McAloon, J., Murrphy, R. C., Greene, R. W., & Ollendick, T. H. (2022). Predictors and Moderators of Two Treatments of ODD in Children. University of Technology Sydney. *J. Clinical Child and Adolescent Psychology*. <https://doi.org/10.1080/15374416.2022.2127102>. Advance online publication.
- Dedousis-Wallace, A., Drysdale, S. A., McAloon, J., & Ollendick, T. H. (2021). Parental and familial predictors and moderators of Parent Management Treatment programs for conduct problems in youth. *Clinical Child and Family Psychology Review*, 24(1), 92–119. <https://doi.org/10.1007/s10567-020-00330-4>.
- Forehand, R., Lafko, N., Parent, J., & Burt, K. B. (2014). Is parenting the mediator of change in behavioral parent training for externalizing problems of youth? *Clinical Psychology Review*, 34(8), 608–619. <https://doi.org/10.1016/j.cpr.2014.10.001>.
- Green, P., & MacLeod, C. J. (2016). SIMR: An R package for power analysis of generalized linear mixed models by simulation. *Methods in Ecology and Evolution*, 7(4), 493–498.
- Greene, R. W., Ablon, J. S., Goring, J. C., Raezer-Blakely, L., Markey, J., Monuteaux, M. C., Henin, A., Edwards, G., & 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(6), 1157–1164. <https://doi.org/10.1037/0022-006X.72.6.1157>.
- Greene, R., & Winkler, J. (2019). Collaborative & Proactive Solutions: A review of research findings in families, schools, and treatment facilities. *Clinical Child and Family Psychology Review*, 22(4), 549–561. <https://doi.org/10.1007/s10567-019-00295-z>.
- Guy, W. (1976). *ECDEU Assessment Manual for Psychopharmacology*. Manual. U.S. National Institute of Health, PsychoPharmacology. <https://psycnet.apa.org/doi/10.1037/e591322011-001>.
- Harada, Y., Saitoh, K., Iida, J., Sakuma, A., Iwasaka, H., Imai, J., Hirabayashi, M., Yamada, S., Hirabayashi, S., & Uchiyama, T. (2004). The reliability and validity of the ODD inventory. *European Child & Adolescent Psychiatry*, 13(3), 185–190. <https://doi.org/10.1186/1753-2000-7-11>.
- Kaminski, J. W., & Claussen, A. H. (2017). Evidence base update for psychosocial treatments for disruptive behaviors in children. *Journal of Clinical Child & Adolescent Psychology*, 46(4), 477–499. <https://doi.org/10.1080/15374416.2017.1310044>.
- Kaminski, J. W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness. *Journal of Abnormal Child Psychology*, 36(4), 567–589. <https://doi.org/10.1007/s10802-007-9201-9>.

- Kanter, J., Santiago-Rivera, A., Santos, M., Nagy, G., López, M., Hurtado, G., & West, P. (2015). A randomized hybrid efficacy and effectiveness trial of behavioral activation for Latinos with depression. *Behavior Therapy*, 46(2), 177–192. <https://doi.org/10.1016/j.beth.2014.09.011>.
- Leijten, P., Raaijmakers, M. A., de Castro, B. O., & Matthys, W. (2013). Does socioeconomic status matter? *Journal of Clinical Child Adolescent Psychology*, 42(3), 384–392. <https://doi.org/10.1080/15374416.2013.769169>.
- Leijten, P., Weisz, J. R., & Gardner, F. (2021). Research strategies to discern active psychological therapy components: A scoping review. *Clinical Psychological Science*, 9(3), 307–322. <https://doi.org/10.1177/2167702620978615>.
- Loeber, R., Burke, J. D., & Pardini, D. A. (2009). Development and etiology of disruptive and delinquent behavior. *Annual Review of Clinical Psychology*, 5(1), 291–310. <https://doi.org/10.1146/annurev.clinpsy.032408.153631>.
- Lundahl, B., Risser, H. J., & Lovejoy, M. C. (2006). A meta-analysis of parent training: Moderators and follow-up effects. *Clinical Psychology Review*, 26(1), 86–104. <https://doi.org/10.1016/j.cpr.2005.07.004>.
- Manly, C. A., & Wells, R. S. (2015). Reporting the use of multiple imputation for missing data in higher education research. *Research in Higher Education*, 56(4), 397–409. <https://doi.org/10.1007/s11162-014-9344-9>.
- Maric, M., Prins, P. J., & Ollendick, T. H. (Eds.). (2015). *Moderators and mediators of youth treatment outcomes*. <https://doi.org/10.1093/med/psych/9780199360345.001.0001>.
- Michelson, D., Davenport, C., Dretzke, J., Barlow, J., & Day, C. (2013). Do evidence-based interventions work when tested in the “real world?” A systematic review and meta-analysis of parent management training for the treatment of child disruptive behavior. *Clinical Child and Family Psychology Review*, 16(1), 18–34. <https://doi.org/10.1007/s10567-013-0128-0>.
- Murrihy, R. C., Kidman, A. D., & Ollendick, T. H. (2010). *Clinical handbook of assessing and treating conduct problems in youth*. Springer Science & Business Media. Springer. <https://doi.org/10.1007/978-1-4419-6297-3>.
- Ng, M. Y., & Weisz, J. R. (2016). Annual research review: Building a science of personalized intervention for youth mental health. *Journal of Child Psychology and Psychiatry*, 57(3), 216–236. <https://doi.org/10.1111/jcpp.12470>.
- Niec, L. N., Barnett, M. L., Prewett, M. S., & Shanley Chatham, J. R. (2016). Group parent–child interaction therapy: A randomized control trial for the treatment of conduct problems in young children. *Journal of Consulting and Clinical Psychology*, 84(8), 682–698. <https://doi.org/10.1037/a0040218>.
- Nock, M. K., Kazdin, A. E., Hiripi, E., & Kessler, R. C. (2007). Lifetime prevalence, correlates, and persistence of oppositional defiant disorder: Results from the National Comorbidity Survey Replication. *Journal of Child Psychology and Psychiatry*, 48(7), 703–713. <https://doi.org/10.1111/j.1469-7610.2007.01733.x>.
- Ollendick, T. H., Greene, R. W., Austin, K. E., Fraire, M. G., Halldorsdottir, T., Allen, K. B., Jarrett, M. A., Lewis, K. M., Whitmore Smith, M., Cunningham, N. R., Noguchi, R. J. P., Canavera, K., & Wolff, J. C. (2016). Parent management training and collaborative and proactive solutions: A randomized control trial for oppositional youth. *Journal of Clinical Child & Adolescent Psychology*, 45(5), 591–604. <https://doi.org/10.1080/15374416.2015.1004681>.
- Pelham, W. E., Jr, Gnagy, E. M., Greenslade, K. E., & Milich, R. (1992). Teacher ratings of DSM-3-R symptoms for the disruptive behavior disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 31(2), 210–218. <https://doi.org/10.1097/00004583-199203000-00006>.
- Rahmqvist, J., Wells, M. B., & Sarkadi, A. (2014). Conscious parenting: A qualitative study on Swedish parents’ motives to participate in a parenting program. *Journal of Child and Family Studies*, 23(5), 934–944. <https://doi.org/10.1007/s10826-013-9750-1>.
- Raudenbush, S. W. (2019). *Hlm 8: Hierarchical linear and nonlinear modeling* (Version 8). Scientific Software International, Inc. https://ssicentral.com/wp-content/uploads/2020/07/HLM_Guide.pdf.
- Rimestad, M. L., O’Toole, M. S., & Hougaard, E. (2020). Mediators of change in a parent training program for early ADHD difficulties. *Journal of Attention Disorders*, 24(14), 1966–1976. <https://doi.org/10.1177/1087054717733043>.
- Rogers, J. L., Howard, K. I., & Vessey, J. T. (1993). Using significance tests to evaluate equivalence between two experimental groups. *Psychological Bulletin*, 113(3), 553–565. <https://doi.org/10.1037/0033-2909.113.3.553>.
- Rowe, R., Costello, E. J., Angold, A., Copeland, W. E., & Maughan, B. (2010). Developmental pathways in oppositional defiant disorder and conduct disorder. *Journal of Abnormal Psychology*, 119(4), 726–738. <https://doi.org/10.1037/a0020798>.
- Sanders, M. R. (1999). Triple P-Positive Parenting Program: Towards an empirically validated multilevel parenting and family support strategy for the prevention of behavior and emotional problems in children. *Clinical Child and Family Psychology Review*, 2(2), 71–90. <https://doi.org/10.1023/A:1021843613840>.
- Seabra-Santos, M. J., Gaspar, M. F., Azevedo, A. F., Homem, T. C., Guerra, J., Martins, V., Leitão, S., Pimentel, M., Almeida, M., & Moura-Ramos, M. (2016). Incredible Years parent training: What changes, for whom, how, for how long? *Journal of Applied Developmental Psychology*, 44, 93–104. <https://doi.org/10.1016/j.appdev.2016.04.004>.
- Silverman, W. K., & Albano, A. M. (1996). *The Anxiety Disorders Interview Schedule for Dsm-IV—Child and Parent Versions*. Psychological Corporation.
- Sloan, D. M., Unger, W., & Beck, J. G. (2016). Cognitive-behavioral group treatment for veterans diagnosed with PTSD: Design of a hybrid efficacy-effectiveness trial. *Contemporary Clinical Trials*, 47, 123–130. <https://doi.org/10.1016/j.cct.2015.12.016>.
- Tolin, D. F., McKay, D., Forman, E. M., Klonsky, E. D., & Thombs, B. D. (2015). Empirically supported treatment Recommendations for a new model. *Clinical Psychology Science & Practice*, 22(4), 317. <https://doi.org/10.1111/cpsp.12122>.
- Weisz, J. R., Donenberg, G. R., Han, S. S., & Weiss, B. (1995). Bridging the gap between laboratory and clinic in child and adolescent psychotherapy. *Journal of Consulting and Clinical Psychology*, 63(5), 688. <https://doi.org/10.1037/0022-006X.63.5.688>.
- Weisz, J. R., & Jensen, P. S. (1999). Efficacy and effectiveness of child and adolescent psychotherapy. *Mental Health Services Research*, 1(3), 125–157. <https://doi.org/10.1023/A:1022321812352>.
- Weisz, J. R., Southam-Gerow, M. A., Gordis, E. B., Connor-Smith, J. K., Chu, B. C., Langer, D. A., McLeod, B. D., Jensen-Doss, A., Updegraff, A., & Weiss, B. (2009). Cognitive-Behavioral therapy versus usual clinical care for youth depression. *Journal of Consulting and Clinical Psychology*, 77(3), 383–396. <https://doi.org/10.1037/a0013877>.

Zaider, T. I., Heimberg, R. G., Fresco, D., Schneier, F., & Liebowitz, M. (2003). Evaluation of the clinical global impression scale among individuals with social anxiety disorder. *Psychological Medicine*, 33(4), 611–622. <https://doi.org/10.1017/s0033291703007414>.

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