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A Retrospective Examination of the Impact of Pharmacotherapy on Parent–Child Interaction Therapy

Chris Wang, MD,[1,i] Yuliang Hu, MD,[1] Paul A. Nakonezny, PhD,[2,3] Valeria Melo, BA,[4] Chelsea Ale, PhD,[5] Arjun P. Athreya, MS, PhD,[6] Julia Shekunov, MD,[1] Rachel Lynch, MD,[7] Paul E. Croarkin, DO, MS,[1,ii] and Magdalena Romanowicz, MD[1]

Abstract

Objective: Parent–child interaction therapy (PCIT) is an evidence-based approach for children aged 2–7 years with disruptive behavior problems. This study examined the effectiveness of PCIT with and without concurrent pharmacotherapy.

Methods: A convenience sample was collected from a retrospective chart review of preschool-aged children treated with PCIT at the Mayo Clinic Young Child Clinic between 2016 and 2020. Quantitative and qualitative data were abstracted from all patients. The sample was divided into two groups based on psychotropic medications status (medicated and unmedicated) at the initiation of PCIT. Effectiveness of treatment was assessed with the change in Eyberg Child Behavior Inventory (ECBI) score. The change over time in ECBI score was compared between the two PCIT groups with and without concurrent pharmacotherapy using a linear mixed model.

Results: Of the 62 youth, 38.71% were females. Mean age was 4.71 ± 1.17 years. The mean baseline ECBI score was 148.74 ± 30.86, indicating clinically significant disruptive behaviors. The mean number of PCIT sessions was 6.59 ± 3.82. There was no statistically significant difference in ECBI scores between the two groups at pre-PCIT (medication group: 149.68, standard error [SE] = 11.61 vs. unmedicated group: 147.92, SE = 10.93, $p = 0.8904$) and at post-PCIT (medication group: 116.27 [SE = 11.89] vs. unmedicated group: 128.86 [SE = 11.57], $p = 0.3464$). There was a statistically significant improvement in ECBI scores for both groups after completing therapy (medication group = −33.41 [−22.32%], SE = 6.27, $p < 0.0001$; $d = 1.144$; unmedicated group = −19.06 [−12.88%], SE = 5.78, $p = 0.0022$; $d = 1.078$).

Conclusions: PCIT reduced disruptive behaviors in this sample of young children regardless of concurrent pharmacotherapy. Future prospective studies should consider one particular pharmacological agent and long-term outcomes of treatment. PCIT and certain pharmacological treatments could have complex and important bidirectional priming effects for both treatments.

Keywords: parent–child interaction therapy, disruptive behavior disorders, early childhood, attention-deficit/hyperactivity disorder, behavior management training, pharmacotherapy

Introduction

The incidence of childhood psychiatric disorders has increased considerably over recent decades with 17.7% of U.S. children diagnosed with depression, anxiety, and/or behavioral/conduct problems causing impairment in functioning at home and at school (Ghandour et al. 2019). The effects of early behavioral and pharmacological interventions are understudied and poorly understood. There is a critical need to maximize these interventions for prevention of further childhood, adolescent, and adult impairment (Lenze et al. 2011). Evidence-based behavioral parent training is a first-line treatment in young children with prolonged, sustained disruptive behavioral problems (Eyberg et al. 2008). Parent–child interaction therapy (PCIT) is one of the most common family-centered behavior management training for young children aged 2–7 years, with an individualized collaborative approach (Johnson et al. 2014).

[1]Department of Psychiatry and Psychology, Mayo Clinic, Rochester, Minnesota, USA.
Departments of [2]Psychiatry and [3]Population and Data Sciences, University of Texas Southwestern, Dallas, Texas, USA.
[4]Mayo Clinic Alix School of Medicine, Rochester, Minnesota, USA.
[5]Department of Psychiatry and Psychology, Mayo Clinic, La Crosse, Wisconsin, USA.
[6]Department of Molecular Pharmacology and Experimental Therapeutics, Mayo Clinic, Rochester, Minnesota, USA.
[7]Department of Pediatrics, Mayo Clinic, Rochester, Minnesota, USA.
[i]ORCID ID (https://orcid.org/0000-0002-5063-1324).
[ii]ORCID ID (https://orcid.org/0000-0001-6843-6503).
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With increasing recognition and diagnosis of psychiatric disorders in young children, there has been a parallel increase in the use of pharmacological treatments. It is estimated that 209,000 young children aged 3–5 years old and 3.4 million 6–12 years old in the United States are prescribed stimulants, antidepressants, and/or antipsychotics over the course of a year (Sultan et al. 2018). Currently, the American Academy of Pediatrics (AAP) and the American Academy of Child and Adolescent Psychiatry (AACAP) practice parameters recommend using evidence-based behavioral therapy as the first-line treatment for preschoolers with attention-deficit/hyperactivity disorder (ADHD). AAP practice parameters specifically mention PCIT as an evidence-based strategy that should be considered in preschoolers with ADHD (Wolraich et al. 2019). Child psychiatry literature also consistently recommends a trial of behavioral therapy for at least 8 weeks before pharmacological treatments are considered (Pliszka and AACAP Work Group on Quality Issues 2007).

Although both PCIT and pharmacotherapy can be beneficial in treating disruptive behaviors separately, currently there is a limited evidence base and no guidelines regarding combined pharmacological treatment with PCIT for children with severe disruptive behaviors (Thomas et al. 2017; Wolraich et al. 2019). There could be unknown synergistic effects between PCIT and pharmacotherapy, similar to combination treatments with psychotherapy and antidepressant medications for mood and anxiety disorders (Treatment for Adolescents with Depression Study Team 2003; Cuijpers et al. 2014).

This study sought to retrospectively examine the effect of PCIT coupled with and without concurrent pharmacotherapy on a sample of youth with disruptive behavioral problems. We hypothesized that children receiving concurrent psychotropic medications along with PCIT would have a greater improvement in behavioral problems as assessed with the Eyberg Child Behavior Inventory (ECBI) than children receiving PCIT monotherapy.

Methods

Participants

Study patients were outpatients who received PCIT at the Mayo Clinic Young Child Clinic either in Rochester, MN, or La Crosse, WI, from 2016 to 2020. Patients included in this study were aged between 2 and 7 years and from both genders, with early disruptive behavioral problems such as aggression, oppositional behaviors, temper outbursts, impulsivity, or problems with concentration. Furthermore, their symptoms met a threshold for clinically significant impairment based on an ECBI score (≥131) completed by their parents. Exclusion criteria included patients with psychosis, non-English–speaking participants, or the inability of family to attend the course. We included patients with developmental delays (language, speech, intellectual, and motor), but not severe intellectual disability or autism spectrum disorder that would impair their ability to participate in PCIT. No patients had a seizure disorder. This study was approved by the central institutional review board at the two sites: Mayo Clinic, Rochester campus in MN and Mayo Clinic, La Crosse campus in WI.

Procedures and measures

Quantitative and qualitative data were abstracted retrospectively from all patients, including demographics, psychiatric comorbidities, medical diagnoses, psychotropic medications, family history of mental illness, trauma history, family structure, which parent participated in PCIT, number of PCIT sessions, and initial and final ECBI scores.

The study sample was divided into two groups based on taking or not taking psychotropic medications at the start of PCIT. The parents of these children had no previous training in PCIT or other formal behavioral parent training. Each PCIT session occurred weekly and lasted $\sim$1 hour. On the Rochester campus, the PCIT-certified therapist was also a board-certified child psychiatrist (M.R.) who was also responsible for medication management. The PCIT-certified therapist in La Crosse (C.A.) collaborated with a pediatrician for medication management.

The standard PCIT format was used in which the therapist observes a parent–child dyad through a one-way mirror and uses a bug-in-the-ear device to coach the parent how to respond to the child's play and other behaviors. Each session had two sequential phases: child-directed interaction (CDI) and parent-directed interaction (PDI). Each phase began with a psychoeducational session to teach the parent skills relevant to that phase, which was then followed by direct coaching sessions throughout the rest of each phase. Coaching sessions provided opportunities for parents to practice communication skills with the goal of fostering positive parent–child relationships, as well as providing immediate feedback and remediation of skill implementation (McNeil and Hembree-Kigin 2011; Lieneman et al. 2017; Thomas et al. 2017). Parents also learn to reinforce their children's positive behaviors, while ignoring most negative behaviors. During relationship building through CDI, caregivers were taught to use Praise, Reflect, Imitate, Describe, Enthusiasm (PRIDE) skills. This focused on establishing warmth in their relationship with their child through learning and applying skills proven to help children feel calm, secure, and good about themselves. In PDI, the caregivers learned strategies to help their child accept the caregiver limits, comply with the caregiver's directions, respect house rules, and demonstrate appropriate behaviors in public.

Independent variable and covariates

The primary independent variable was group membership between children taking psychotropic medication and children not taking psychotropic medication. Age (years), ADHD status (yes/no), and number of PCIT sessions received were included as covariates in the models. These variables, which were selected *a priori*, were included as covariates in the models to bolster precision in the evaluation of the effect of medication status on ECBI scores.

Outcome variable

The outcome was a measure of the patients' disruptive behavior as reported by the parents. Each child's behavior was assessed at baseline at the initial consultation appointment and immediately after the final session of their PCIT treatment course using the ECBI.

The ECBI is a comprehensive 36-item parent/caregiver questionnaire, behaviorally specific rating scale that assesses the current frequency and severity of disruptive behaviors in the home settings, as well as the extent to which parents find the behavior troublesome. The questionnaire is divided into the intensity scale and problem scale. In our study, we gathered data using the intensity scale, which measures the frequency (Never [1] to Always [7]) of behaviors. Raw score cutoff of 131 or higher on the intensity scale is considered to potentially have a clinically significant problem (Eyberg and Pincus 1999; Epstein et al. 2015).

Statistical analysis

Demographic and clinical characteristics for the sample of children were described using the sample mean and standard deviation for continuous variables, and the frequency and percentage for categorical variables. To identify any differences between characteristics of the two groups (taking psychotropic medication [$n=28$] vs. not taking psychotropic medication [$n=34$]), we used the two-independent sample *t*-test with the Satterthwaite method for unequal variances (continuous variables) and Fisher's exact test (categorical variables).

The change over time in ECBI scores was compared between the group taking psychotropic medications and the group not taking psychotropic medications using a linear mixed model analysis of repeated measures. The mixed model contained fixed effects terms for the two groups, time, and group × time interaction. Location of the clinic for treatment was included as a random effect. Age, presence of comorbid ADHD, and number of PCIT sessions received were included as covariates in the model. Restricted maximum likelihood estimation and Type 3 tests of fixed effects were used, with the Kenward–Roger correction applied to the variance components covariance structure (Kenward and Roger 1997). Least squares means (LSM, adjusted group means) were estimated as part of the mixed model to interpret the group effect (LSM difference between groups). Simple group effects at each time period as well as within-group contrasts (change) from pre- to post-PCIT were also assessed. Cohen's *d* was calculated and interpreted as the effect size estimator.

Statistical analyses were carried out using SAS software, version 9.4 (SAS Institute, Inc., Cary, NC). The level of significance was set at $\alpha=0.05$ (two-tailed) and we implemented the false discovery rate procedure to control false positives over the multiple tests (Benjamini and Hochberg 1995).

Results

Participant characteristics

Of the 62 youth, 38.71% were females. The mean age of the sample was 4.71 ± 1.17 years (age range = 2–7 years). Mean baseline ECBI score (pre-PCIT) was 148.74 ± 30.86, indicating clinically significant disruptive behaviors. After correction for multiple comparisons, the medicated patients had a significantly higher rate of an ADHD diagnoses compared with the unmedicated patient group. Demographic and clinical characteristics of the children, overall and by treatment group, are given in Table 1. Neurogenetic disorders (30.6%) were the most common medical comorbidity. The majority of the patients in the medication group were taking nonstimulant medications and/or stimulant medications for the treatment of ADHD. Medications included nonstimulants (57.1%) such as guanfacine ER, guanfacine, clonidine, and atomoxetine. Stimulants (50%) included both various amphetamine salts and methylphenidate preparations. Selective serotonin reuptake inhibitors (21.4%) included fluoxetine, sertraline, and escitalopram. Less commonly used medications included melatonin (14.3%), antipsychotics (14.3%) such as aripiprazole and risperidone, and the benzodiazepines (7.1%) diazepam and clonazepam. Graduation/completion of the course of PCIT treatment was attained in 50.0% of the sample as determined by the PCIT-certified clinician. In PCIT with pharmacotherapy, $n=17$ (60.7%) reached completion and 6 (21.4%) dropped out. In PCIT without pharmacotherapy, $n=14$ (41.2%) reached completion and 18 (52.9%) dropped out.

Disruptive child behaviors

For disruptive behavior, the mixed model repeated measures analysis revealed no significant group by time interaction effect

Table 1. Demographic and Clinical Characteristics of the Overall Sample and by Group

Characteristic	*Overall sample* (N = *62*)	*Taking psychotropic medication* (n = *28*)	*Not taking psychotropic medication* (n = *34*)	p-*Value (FDR)*
Patient demographics				
Age, years, M (SD)	4.71 (1.17)	5.07 (4.67)	4.41 (3.98)	0.0271 (0.1930)
Female sex, % (*n*)	38.71 (24)	39.29 (11)	38.24 (13)	1.0000 (1.0000)
Patient factors				
Baseline ECBI score, M (SD)	148.74 (30.86)	156.63 (32.94)	141.50 (27.54)	0.0970 (0.2910)
No. of psychiatric diagnoses per patient, M (SD)	2.00 (0.86)	2.25 (0.84)	1.79 (0.84)	0.0386 (0.1930)
No. of psychiatric diagnoses per family, M (SD)	1.98 (1.63)	2.03 (1.68)	1.94 (1.61)	0.8229 (0.8817)
No. of PCIT sessions received per patient, M (SD)	6.59 (3.82)	7.68 (3.73)	5.79 (3.74)	0.0606 (0.2273)
Disruptive behavior disorder, % (*n*)	27.42 (17)	25.00 (7)	29.41 (10)	0.7796 (0.8817)
ADHD, % (*n*)	32.26 (20)	57.14 (16)	11.76 (4)	0.0003 (0.0045)
Anxiety disorder, % (*n*)	41.94 (26)	39.29 (11)	44.12 (15)	0.7981 (0.8817)
Oppositional disorder, % (*n*)	35.48 (22)	39.29 (11)	32.35 (11)	0.6035 (0.8817)
Adjustment disorder, % (*n*)	11.29 (7)	7.14 (2)	14.71 (5)	0.4419 (0.8817)
Medical comorbidities, % (*n*)	54.84 (34)	57.14 (16)	52.94 (18)	0.8012 (0.8817)
Family history of psychiatric illness, % (*n*)	77.42 (48)	82.14 (23)	73.53 (25)	0.5457 (0.8817)
Trauma experience, % (*n*)	14.52 (9)	10.71 (3)	17.65 (6)	0.4945 (0.8817)
Site of treatment, Mayo Clinic Rochester, MN, % (*n*)	69.35 (43)	75.00 (21)	64.71 (22)	0.4201 (0.8817)

Two-independent sample *t*-test with the Satterthwaite method for unequal variances (continuous variables) and Fisher's exact test (categorical variables) were used to identify any differences between characteristics of the two groups. *p*-Value (two-tailed) associated with the test of group differences (medication vs. nonmedication) on each characteristic. Baseline ECBI had 6 and 10 missing observations in the medication and nonmedication groups, respectively. PCIT sessions had 3 and 10 missing observations in the medication and nonmedication groups, respectively.

ADHD, attention-deficit/hyperactivity disorder; ECBI, Eyberg Child Behavior Inventory; FDR, false discovery rate; M, sample mean; PCIT, parent–child interaction therapy; SD, standard deviation.

($F = 2.84$, df = 1, 35.45; $p = 0.1009$), no significant main effect of group ($F = 0.20$, df = 1, 38.28, $p = 0.6611$), but a significant time effect ($F = 37.77$, df = 1, 35.22; raw $p < 0.0001$). The least squares group means (adjusted ECBI scores) were not significantly different between the two groups at pre-PCIT (taking psychotropic medication: 149.68 [standard error, SE = 11.61] vs. not taking psychotropic medication: 147.92 [SE = 10.93], $p = 0.8904$; $d = 0.041$) (Table 2 and Fig. 1) and at post-PCIT (taking psychotropic medication: 116.27 [SE = 11.89] vs. not taking psychotropic medication: 128.86 [SE = 11.57], $p = 0.3464$, $d = 0.265$) (Table 2 and Fig. 1).

However, as given in Table 2 and Figure 1, the pattern of the adjusted LSM revealed a significant improvement (decrease) in disruptive behavior (adjusted ECBI scores) from pre-PCIT to post-PCIT for both the groups taking psychotropic medications (149.68 [SE = 11.61] at pre vs. 116.27 [SE = 11.89] at post, LSM decrease = −33.41 [SE = 6.27], mean percentage change = 22.32% decrease, $p < 0.0001$; $d = 1.144$) and the group not taking psychotropic medications (147.92 [SE = 10.93] at pre vs. 128.86 [SE = 11.57] at post, LSM decrease = −19.06 [SE = 5.78], mean percentage change = 12.88% decrease, $p = 0.0022$; $d = 1.078$).

Discussion

This retrospective study compared the effectiveness of PCIT among young children taking concurrent psychotropic medication versus receiving PCIT monotherapy. There were no statistical differences between the two groups in ECBI intensity scores both at pre-PCIT and at post-PCIT on a linear model. More importantly, for both groups, there was a significant improvement and decrease in disruptive behaviors as measured by the ECBI intensity scores from pre-PCIT to post-PCIT. These findings are in contrast with our hypothesis that the group of children receiving psychotropic medications and PCIT would have a superior outcome compared with the children receiving PCIT monotherapy.

The group of children receiving medications had an increased number of psychiatric comorbidities and were older than the group of children receiving PCIT as monotherapy. However, these differences were not statistically significant after correction for multiple comparisons. Patients with multiple comorbidities frequently present with progressively more psychiatric symptoms with age, demonstrating changes in mood, elevated anxiety, and worsening disruptive behaviors often necessitating psychotropic medications for management (Gleason et al. 2007; Melton et al. 2016). In addition, providers may understandably have a higher level of confidence with prescribing medications to older children (Gerlach et al. 2016).

In addition, there were significantly more patients with comorbid ADHD in the medicated group. This finding is in line with our results mentioned because ADHD frequently co-occurs with other psychiatric disorders such as anxiety disorders, oppositional defiant disorders, and depression (Wilens et al. 2002; Angold and Egger 2007). High rates of hyperactivity, poor attention, and disruptive behaviors in children with ADHD yield substantial functional impairment both at school and at home. Subsequently, many providers may select a stimulant or a nonstimulant medication as first-line treatment to manage any disruptive behaviors given the strong evidence of medications having a robust and rapid response in treating ADHD (Greenhill et al. 2006). This is in contrast with current recommendations from both the AAP and AACAP practice parameters recommending an evidence-based behavioral therapy, such as PCIT, as the first-line treatment for preschoolers with ADHD. However, quality PCIT could be difficult for parents and pediatricians to access (Lieneman et al. 2019).

Moreover, in a small pilot study in 2017 comparing a behavioral and pharmacological treatment in preschool children with ADHD, the authors concluded that disruptive behaviors in both treatment groups improved significantly over time as measured by ECBI scores, with methylphenidate having superior effects in reducing the intensity of behavioral problems than PCIT. However, this study had several limitations including a high attrition and side effect rate (van der Veen-Mulders et al. 2018). A study by Pelham et al. (2016) examined the best sequence for the implementation of behavioral therapy and medication management in children aged 5–12 years. The authors concluded that behavioral intervention followed by medication treatment had superior outcomes compared with medication treatment followed by behavioral therapy (Pelham et al. 2016).

One strength of our study is that very few previous studies compared the effectiveness of PCIT in patients with and without pharmacotherapy (van der Veen-Mulders et al. 2018). The present findings suggest pharmacotherapy, PCIT, or both, may be reasonable options to choose in children with significant behavioral problems, exhibiting functional impairment in multiple settings. However, caution is warranted in light of many study limitations, the current evidence base, and the inherent psychological, developmental, pharmacodynamic, and pharmacokinetic complexities in treating young children. Currently, off-label use of psychotropic medications is common (Gerlach et al. 2016; Sultan et al. 2018).

The complexity of long-term effects of psychotropic medications on developmental and neurobiological changes in children remains poorly understood (Vitiello 1998; Shonkoff and Phillips 2000). Taking these factors into account, PCIT could be a judicious and safe first-line treatment option. However, despite the effectiveness of PCIT, high dropout rates before graduation or completion of the treatment are a significant problem (Lanier 2011). In our study, 38.7% of the participants (families) did not complete the course of PCIT citing a perceived lack of efficacy and pursued pharmacotherapy for the child. This study design was not able to assess whether this decision to discontinue PCIT was partially due to the associated time burden, accessibility, or parental motivation. These are important future questions to consider. Conversely, 11.3% of the families were participating in ongoing PCIT at the time of data collection.

Correspondingly, a course of behavioral training takes time, patience, and additional support at home and at school (Lieneman et al. 2019). Setting appropriate expectations and developing a strong patient/family to physician alliance are key to success. Owing to travel and medical limitations from the COVID-19 pandemic, PCIT delivered remotely and internet based may be crucial in providing access to care for these young children and their families. For research efforts, virtual PCIT approaches delivered in the child's home environment may also have greater ecological validity as compared with standard approaches (Comer et al. 2017).

Limitations

Some limitations of this study include a high attrition rate of 38.7% combined in both groups (medicated group = 21.4% vs. unmedicated group = 52.9%) as an example of attrition bias. This may have inflated the effectiveness of PCIT in families who continued to graduation, while families who dropped out may not have found sufficient benefit or success with PCIT. However, our analyses did include the number of PCIT sessions as a covariate. Furthermore, the study was a naturalistic examination from

Table 2. The Effect of Taking Psychotropic Medication Versus Not Taking Psychotropic Medication on Disruptive Child Behavior

Pre-PCIT						*Post-PCIT*					*Change from pre to post*				
Outcome and group	*LSM (SE)*	*95% CI*	F *statistic*	p	d	*LSM (SE)*	*95% CI*	F *statistic*	p	d	*LSM (SE)*	*95% CI*	F *statistic*	p	d
ECBI score															
Taking psychotropic medication	149.68 (11.61)	104.53 to 194.83				116.27 (11.89	73.97 to 158.56								
Not taking psychotropic medication	147.92 (10.93)	89.24 to 206.59				128.86 (11.57)	73.26 to 184.46				−33.41 (6.27	−46.14 to −20.67	$F(1, 35.15) = 28.36$	<0.0001	1.144
LSM group difference	1.76 (12.70)	−27.37 to 23.84	$F(1, 44) = 0.02$	0.8904	0.041	−12.59 (13.25)	−14.02 to 39.22	$F(1, 49.22) = 0.90$	0.3464	0.265	−19.05 (5.78)	−30.78 to −7.32	$F(1, 35.54) = 10.87$	0.0022	1.078

LSM estimate adjusted for age, ADHD, and number of PCIT sessions received; LSM group difference = difference of LSM estimates (taking psychotropic medication vs. not taking psychotropic medication); 95% CI for the group LSM estimate; *p*-value = associated with the test (*F*-statistic) of the LSM group difference at pre-PCIT and at post-PCIT as well as the change from pre to post (post minus pre) within each group. Higher ECBI score equals greater disruptive child behavior.

95% CI, 95% confidence interval; ADHD, attention-deficit/hyperactivity disorder; *d*, Cohen's *d*; ECBI, Eyberg Child Behavior Inventory; LSM, least squares mean; PCIT, parent–child interaction therapy; SE, standard error.

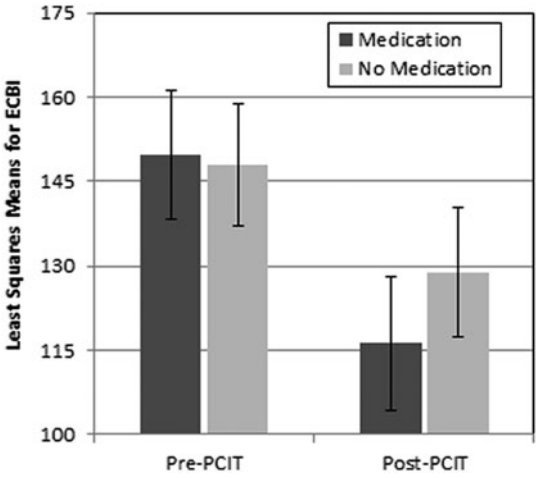

FIG. 1. Adjusted LSM (LSM ± SE) for disruptive child behavior (ECBI score) from the group by time period tests of simple effects from the linear mixed model. LSM were adjusted for age, ADHD, and number of PCIT sessions received. No significant group differences were observed at pre-PCIT ($p = 0.8904$) and at post-PCIT ($p = 0.3464$). A significant improvement (decrease) was observed in disruptive behavior (adjusted ECBI scores) from pre-PCIT to post-PCIT for both the psychotropic medication group (LSM decrease = −33.41 [SE = 6.27], $p < 0.0001$) and the non-psychotropic medication group (LSM decrease = −19.06 [SE = 5.78], $p = 0.0022$). A higher ECBI score represents greater disruptive behavior. ADHD, attention-deficit/hyperactivity disorder; ECBI, Eyberg Child Behavior Inventory; LSM, least squares means; PCIT, parent–child interaction therapy; SE, standard error.

retrospective chart reviews that included PCIT treatment delivered at a pediatrics or child psychiatry clinic. As a result, families within the sample were treated by clinicians (pediatrician and child psychiatrist) from different disciplines. This might have created a confound and as a result clinic location was included in our statistical model as a random effect. The study was not blinded nor randomized. We were also not able to compare completion rates of PCIT among the patients who were medicated and unmedicated at baseline. However, our analyses included the number of PCIT sessions as a covariate that accounts for this concern.

Our primary outcome in this study was parent-rated ECBI intensity scores, which are frequently used in studies of parent training. ECBI intensity is not a direct measure of ADHD symptoms and further clinician, daycare provider, or preschool teacher assessments may have provided additional important data points. This study examined an acute intervention, and the collection of ECBI scores weeks to months after the completion of PCIT is an important future consideration. In addition, the ECBI Problem Scale was not examined due to a lack of data. Finally, the study examined and classified medication status based on the use of any psychotropic medication. This most likely creates confounds that cannot be accounted for in a study of this size and scope.

Conclusion

PCIT is an evidenced-based behavioral training therapy that has been shown to be helpful in reducing disruptive behaviors. In this retrospective naturalistic study, concurrent pharmacotherapy added to PCIT did not appear to enhance or diminish the clinical effects of PCIT in young children. Novel delivery method, protocols, and training will likely improve the access for PCIT in the future.

Clinical Significance

Parent-child interaction therapy remains favorable as a form of behavioral therapy in as first-line treatment for young children with disruptive behavioral problems before pharmacotherapy is considered.

Future Research

Future studies should include larger sample sizes, prospective designs, clinician ratings, randomization, and blinding. For example, one prospective design could focus on comparing once specific medication or class of medications with PCIT. Furthermore, additional data points including ECBI Problem Scale and Dyadic Parent-Child Interaction Coding System (DPICS) scores would have additional utility in assessing change over the course of PCIT (Robinson and Eyberg 1981).

Disclosures

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Address correspondence to:
Magdalena Romanowicz, MD
Department of Psychiatry and Psychology
Mayo Clinic
Rochester, MN 55905
USA

E-mail: romanowicz.magdalena@mayo.edu