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Condensing Parent Training: A Randomized Trial Comparing the Efficacy of a Briefer, More Intensive Version of Parent-Child Interaction Therapy (I-PCIT)

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Abstract

Objective: The current study examined the comparative efficacy of a more intensive version of Parent-Child Interaction Therapy (I-PCIT; 5 days/week over 2 weeks) versus a time-limited weekly PCIT format (1 day/week over 10 weeks) in treating early childhood externalizing behavior problems.

Method: Using a randomized trial design, 60 young children (mean age [M_{age}] = 4.33 years; 65% male; 85% Latinx) with clinically elevated levels of externalizing behavior problems and their parents were assigned to either I-PCIT ($n = 30$) or time-limited PCIT ($n = 30$). Families completed pre-, post-, and follow-up assessments 6–9 months following treatment completion. Parents completed measures of child behavior, discipline practices, and parenting stress. Observational data on child behavior and parenting were also collected.

Results: Noninferiority and multivariate repeated-measures analyses indicated comparable improvements across 6 out of 7 observed and parent-reported outcomes, including parenting skills, discipline practices, and child externalizing behavior problems at posttreatment. Comparable treatment gains remained at follow-up, with the caveat that parents in time-limited PCIT reported lower externalizing behavior problems compared with I-PCIT, although both groups were still significantly better compared with pretreatment. Lastly, moderation analyses indicated that parents experiencing high levels of stress benefited more from I-PCIT in terms of decreasing child externalizing behavior compared with time-limited PCIT.

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Conclusions: I-PCIT appears to be a viable treatment option for families, especially those experiencing high levels of stress, in terms of targeting early externalizing behavior problems within a short period of time.

Keywords

parent training; Parent-Child Interaction Therapy (PCIT); externalizing behavior problems; child; brief treatment

Externalizing behavior problems, including aggression, defiance, inattention, hyperactivity, and impulsivity, represent the most common mental health referral in early childhood and are predictive of more serious externalizing and internalizing disorders in later childhood and adolescence (Upshur, Wenz-Gross, & Reed, 2009). Behavioral parent-training (BPT) interventions, which typically range from 10 to 16 weekly sessions, are the treatment of choice for young children with externalizing behavior problems (Eyberg, Nelson, & Boggs, 2008). Yet, despite their effectiveness, BPT programs have historically suffered from poor engagement and retention (Chacko et al., 2016). For example, Parent-Child Interaction Therapy (PCIT) studies indicate high levels of attrition ranging from 35% to 50% (Chaffin et al., 2009; Danko, Garbacz, & Budd, 2016; Eyberg et al., 2001; McCabe & Yeh, 2009). Combined with the high levels of functional impairment associated with children's externalizing behavior problems and corresponding parental distress (Johnson & Reader, 2002), increasing attention has been gathered on the viability of shortening the delivery of evidence-based parenting programs to maximize rapid improvement and cost-effectiveness (Lieneman, Quetsch, Theodorou, Newton, & McNeil, 2019; Mersky, Topitzes, Janczewski, & McNeil, 2015).

For example, the Family Check-Up (FCU; Dishion & Kavanagh, 2003) is a brief, three-session intervention that uses motivational interviewing to target parenting practices. In comparison to a no-treatment control, FCU is successful in decreasing destructive child behavior and increasing positive parenting (Dishion et al., 2008). Abbreviated, four-session interventions have also been successfully implemented within primary care settings, including the Triple P-Positive Parenting Program (Turner & Sanders, 2006) and PCIT (Berkovits, O'Brien, Carter, & Eyberg, 2010). Although these brief interventions in primary care settings, as well as the FCU, are effective compared with no intervention, their short number of sessions can limit the implementation of all treatment components traditionally included in BPT (e.g., time out) and shown to be important for long-term success (Kaminski, Valle, Filene, & Boyle, 2008). Additionally, most studies use a waitlist control as their comparison and rely solely on parent report, without the inclusion of observational measures. In contrast, a more intensive model in which all components of treatment are implemented and practiced may reduce functional impairment (e.g., child's behavioral difficulties at home) more quickly and enhance family motivation in a more focused treatment period. This has the potential to increase participant engagement and the effect of the intervention. Providing treatment in a shorter but more focused way has been implemented with internalizing disorders (Davis, Ollendick, & Öst, 2009; Mörtberg, Clark, Sundin, & Åberg Wistedt, 2007; Storch et al., 2007). For example, a week-long group-based

cognitive-behavioral intervention has shown to be successful in treating children with selective mutism (Cornacchio et al., 2019).

Traditionally, completion of PCIT requires families to satisfy strict “mastery” criteria in terms of using parenting skills and managing child behavior. Consequently, treatment sessions can vary greatly in length, with the largest PCIT study ($n = 1,318$), to our knowledge, finding an average of 20.5 sessions (Lieneman et al., 2019). In addition to the costs of extended treatment sessions (Goldfine, Wagner, Branstetter, & Mcneil, 2008), this requirement of mastery may affect the high attrition rates seen in various PCIT studies (Chaffin et al., 2009; Danko et al., 2016; Eyberg et al., 2001; McCabe & Yeh, 2009). To combat these limitations, time-limited PCIT approaches have been utilized, with similar levels of success to traditional PCIT. For example, Thomas and Zimmer-Gembeck (2012) utilized a 12-session time-limited approach and showed comparable or significantly better child and parenting outcomes compared with traditional PCIT. Positive findings were also documented by Nixon, Sweeney, Erickson, and Touyz (2003) with the use of a hybrid in-person and telephone 10-session approach. An even briefer hybrid approach was conducted within a group format by Mersky, Topitzes, Grant-Savela, Brondino, and McNeil (2016) and Mersky et al. (2015), who had foster families attend an intensive 2-day (14-hr) session followed by 8 weeks of telephone consultation. Although this adaptation showed initial success, it is important to note that the results were limited to parent report of child externalizing behavior problems (i.e., no parenting skills or observational measures). Additionally, only a 6-week follow-up period was conducted. Thus, although these time-limited PCIT adaptations have shown promise, no study to date has compared them to a short *and* intensive adaption of PCIT within a longer follow-up period while including observational measures.

Current Study

We previously conducted a small nonrandomized study ($n = 11$) documenting the feasibility of condensing PCIT to a shorter and more intensive format. PCIT was chosen due to its competency-based model that emphasizes not only a strengthening of the parent-child relationship but also parenting skill acquisition. The unique delivery system of PCIT allows parents to observe “in vivo” changes in their child’s behavior during sessions. Similar to how treatments for obsessive-compulsive disorder (OCD) have been adapted (Storch et al., 2007), intensive PCIT (I-PCIT) was delivered in 60- to 90-min sessions across 5 days per week for 2 weeks. I-PCIT previously yielded significant improvements in children’s externalizing behavior problems, positive parenting skills, parental stress, and observed compliance following treatment as well as maintained in a 4-month follow-up (Graziano et al., 2015). However, the small sample size and nonrandomized nature of the study significantly affected our ability to draw conclusions about whether this briefer, more intensive version of PCIT is comparable to time-limited PCIT. To address these past limitations, the current study utilized a randomized trial design to compare I-PCIT (5 days/week for 2 weeks) to time-limited weekly PCIT (1 day/week for 10 weeks). Consistent with community trials (Thomas & Zimmer-Gembeck, 2012; Webb, Thomas, McGregor, Avdagic, & Zimmer-Gembeck, 2017) and to match the dose of I-PCIT, we chose a 10-session time-limited version of traditional PCIT as our comparison group. Matching the dose allowed for

a better understanding of how the frequency and intensity of I-PCIT affect treatment outcomes. A longer follow-up period of 6–9 months upon treatment completion was also implemented while providing both interventions at no cost to ensure that families across socioeconomic backgrounds were represented. I-PCIT can be completed in just 2 weeks, contains all core treatment components, and includes objective measures of improvement. Given that parental stress is a predictor of attrition (Werba, Eyberg, Boggs, & Algina, 2006), this specific adaptation may aid to serve families at the greatest risk for treatment dropout by providing a briefer treatment option that has been shown to reduce parental distress (Graziano et al., 2015). We expected that I-PCIT would yield less treatment attrition compared with time-limited PCIT, based on the results of previous shortened adaptations (Nixon et al., 2003; Thomas & Zimmer-Gembeck, 2012), but that both treatments would be comparable and effective in initially reducing children’s externalizing behavior problems while improving parenting outcomes (i.e., more positive parenting skills, less parental stress).

Method

Participants

The study took place in an outpatient child clinic in a large urban southeastern city in the United States with a large Latinx population. For study inclusion, children had to be between 2 and 7 years of age, parents had to rate their children above the clinically significant range (T score ≥ 60) on a measure of child externalizing behavior problems (Eyberg Child Behavior Inventory; Eyberg & Pincus, 1999) and be willing to come to treatment every day (Monday-Friday) during a 2-week period, and both parent and child had to be able to speak and understand English. Exclusion criteria included an intellectual disability (full-scale IQ < 70 based on the Wechsler Preschool and Primary Scale of Intelligence, 4th Edition [WPPSI-IV]; Wechsler, 2012), a previous autism spectrum disorder diagnosis, or the inability of parents to attend sessions daily. Of the 182 families that contacted our clinic, 116 were excluded for various reasons. See Figure 1 for a CONSORT diagram outlining study enrollment.

The final participating sample consisted of 60 children who displayed clinically elevated externalizing behavior problems and whose parents provided consent to participate in the study. The final sample of children had a mean age of 4.33 years (range: 2–6.92 years of age), and most of the children were boys (65%) and Latinx (85%). None of the children were currently receiving or had ever taken psychotropic medication. See Table 1 for other descriptive data for the final sample.

Study Design and Procedure

This study was approved by the university’s Institutional Review Board. Participants were randomized to I-PCIT ($n = 30$) or time-limited PCIT ($n = 30$) without stratification using a randomly generated number table following their pretreatment assessment. Clinicians delivering both interventions were clinical psychology or mental health counseling graduate students who received at least 40 hr of training in PCIT and were supervised weekly by a licensed clinical psychologist, who is a certified trainer by PCIT International. Although it

was not possible to systematically measure treatment fidelity, clinicians filled out the PCIT manual's fidelity sheets at the end of each session, and supervision was done via video review. A posttreatment assessment was conducted within 1 week after the completion of treatment, and a follow-up assessment was conducted 6–9 months after completion of treatment (mean time of follow-up = 6.72 months). Across all assessments, parents completed various behavioral and parenting questionnaires and participated in observations of three 5-min standard parent-child interaction situations that varied in the degree of parental control (child-led play, parent-led play, and cleanup). As shown in Table 1, there were no significant differences between the intervention groups on any demographic variables. Both interventions were provided at no cost to the families. Gift cards (\$25) were provided to families at the post- and follow-up assessments.

Intervention Description and Adaptation

Although it is beyond the scope of this article to provide a full detailed description of PCIT (see Zisser & Eyberg, 2010), it is important to note that PCIT progresses through two distinct phases: child-directed interaction (CDI) and parent-directed interaction (PDI). During CDI, parents follow their child's lead in play by using the nondirective PRIDE skills (i.e., “do skills”): praising the child, reflecting the child's statements, imitating the child's play, describing the child's behavior, and using enjoyment. They learn to apply PRIDE skills to the child's appropriate play and ignore undesirable behaviors, and they are taught to avoid verbalizations that take the lead away from the child during the play (i.e., “do not skills”), including questions, commands, and negative statements (e.g., criticism). During PDI, parents set limits to reduce child noncompliance/negative behavior and learn to use effective commands and consistently follow through with time out for noncompliance. Parents also learn how to deal with aggressive behavior and public misbehavior. The first session for each phase involves a “teach” session where the skills are presented to the parent. The teach session for each phase is followed by a series of coaching sessions where the therapist coaches the parent in vivo through a one-way mirror (using a wireless headset) on their use of the CDI and PDI skills with their child. In traditional PCIT, parents must meet mastery criteria after each phase to progress and complete treatment. Mastery of CDI is met when parents are able to demonstrate a high level of positive parenting skills during a 5-min observation period. Mastery of PDI consists of limiting negative parenting and successfully implementing appropriate consequences during another 5-min interaction with their child. Multiple meta-analyses have demonstrated the overall effectiveness of PCIT in decreasing child externalizing behavior problems and increasing parenting skills (Cooley, Veldorale-Griffin, Petren, & Mullis, 2014; Thomas, Abell, Webb, Avdagic, & Zimmer-Gembeck, 2017; Ward, Theule, & Cheung, 2016).

The adaptation of I-PCIT in the current study involved changing the frequency of the intervention with no requirement of mastery to progress; no changes to the core skills and principles of treatment were made. Specifically, in I-PCIT, families attended 60- to 90-min sessions, 5 days a week for 2 weeks. As in traditional PCIT, during the first session, a “teach” of CDI was conducted, in which the parent learned and briefly practiced skills with the therapist. This was followed by four coaching sessions in which the therapist actively coached the parent toward mastery of the interaction skills. During the second week, a teach

session of PDI was conducted, followed by four coaching sessions in which the therapist actively coached the parent on using effective commands and implementing the time-out procedures. CDI continued to be assessed and coached along with PDI skills in the PDI phase of treatment. The same 60- to 90-min sessions were conducted for families assigned to time-limited PCIT, except they were seen once a week for 10 weeks. Lastly, it is important to note that all families received 10 sessions without the requirement of mastery criteria for treatment progression or completion.

Measures

Externalizing behavior problems.—Parents completed the Eyberg Child Behavior Inventory (ECBI; Eyberg & Ross, 1978), a 36-item questionnaire that is designed to assess the presence of externalizing problems in children ages 2 through 16 years. The total intensity scale *t* score was used in the current study as the main measure of externalizing behavior problems ($\alpha_s = .84-.93$).

Parenting skills and child compliance.—The Dyadic Parent-Child Interaction Coding System, 4th Edition (DPICS-IV; Eyberg, Nelson, Ginn, Bhuiyan, & Boggs, 2013), an established behavioral coding system, was used to measure the quality of parent-child interactions across all assessments. Consistent with prior PCIT research, we created a composite of “do skills” (behavior descriptions, reflections, praises) and “don’t skills” (questions, commands, and negative talk) reflecting behaviors parents are taught during treatment to use and not use during a child-led play. Children’s compliance levels during the cleanup situation was also calculated (i.e., ratio of number of complies to number of commands). Undergraduate student coders, who were masked to treatment status, were trained to 80% agreement with a criterion tape and coded 20% of the observations a second time to assess reliability. Reliability for the “do skills” ($r_s = .87-.94$) and “don’t skills” as well as rates of compliance were excellent ($r_s = .99$).

Parenting stress.—Parents completed the Parenting Stress Index-Short Form (PSI-SF; Abidin, 1983). The PSI-SF is a widely used 36-item self-report instrument for parents of children ages 1 month to 12 years that measures parental stress (Abidin, 1983). The PSI-SF total raw score was used to measure overall parenting stress ($\alpha_s = .88-.94$).

Discipline strategies.—Parents completed the Parenting Scale (PS; Arnold, O’Leary, Wolff, & Acker, 1993), a 30-item self-report measure that assesses parental discipline practices of children as young as 18 months. The effectiveness of discipline techniques is measured based on three factor scores (Laxness, Overreactivity, Verbosity). The Laxness ($\alpha_s = .82-.88$) and Overreactivity ($\alpha_s = .67-.83$) scales were used to assess parenting practices. Due to poor reliability of the Verbosity scale (.33-.70), this scale was removed from all analyses.

Treatment satisfaction.—The Therapy Attitude Inventory (TAI; Brestan, Jacobs, Rayfield, & Eyberg, 1999) is a 10-item parent-report measure that assesses parent satisfaction with treatment. The TAI was administered at the postintervention assessment, and the overall satisfaction item was utilized in the current analyses.

Data-Analysis Plan

All analyses were conducted using Statistical Package for the Social Sciences (SPSS) 25.00. Families that dropped out of treatment did not differ significantly from treatment completers on demographic variables or pretreatment study measures. Of treatment completers ($n = 50$), only one family was missing posttreatment data for one parent-reported outcome (i.e., PSI-SF), and only two families were missing posttreatment observational data. Given the low level of missing data at posttreatment, missing-value analyses were not deemed indicated. Of treatment completers ($n = 50$), 43 families completed the follow-up assessment. Families that completed the follow-up assessment did not differ significantly from families that did not on any demographic, pretreatment, or posttreatment study variables. Of these 43 families, only two were missing data on two parent-reported outcomes (i.e., ECBI and PS), and two were missing data on observational measures. All available data were used for each analysis. Given the low level of missing data, which were missing at random, multiple imputation with 20 iterations was used (Rubin, 1987). Analyses were rerun with and without multiple imputation, and no meaningful differences in the pattern of results emerged; thus, for a larger total number, we chose to report analyses with the use of multiple imputation (i.e., pooled values). Lastly, given the low frequency of father involvement (i.e., only 16.66% across both treatment groups), they were not separately examined.

First, noninferiority was assessed using a one-sided noninferiority test. A standard equivalence margin (δ) has not been established for PCIT outcomes (Niec, Barnett, Prewett, & Shanley Chatham, 2016). However, within clinical trials, it is recommended that a new treatment perform within 10–20% of an established treatment (Allen & Seaman, 2007). Thus, the acceptable study range for noninferiority was established by calculating δ based on 20% of the time-limited PCIT group mean on each outcome. To assess changes over time and reduce the Type I error rate, we also conducted a multivariate repeated-measures analysis of variance (ANOVA). Two multivariate analyses of variance (MANOVAs) were run separately with and without follow-up data. Intervention type (I-PCIT vs. time-limited PCIT) was the between-subjects factor. Within-subjects follow-up contrast tests, with a Bonferroni correction to minimize Type I error, were conducted between the pretreatment and posttreatment as well as follow-up assessments. Cohen's d effect size estimates ($[\text{pretreatment-posttreatment/follow-up}]/\text{pooled standard deviation } [SD]$) were calculated separately for both treatments. Post hoc analyses were also conducted to examine the moderating role of parenting stress on child externalizing behavior problems. Moderation analyses were conducted in line with procedures outlined by Aiken, West, and Reno (1991).

Results

Attrition and Satisfaction

In terms of attrition, 3% of families in I-PCIT ($n = 1$) dropped out of treatment compared with 17% of families in time-limited PCIT ($n = 5$). Additionally, four families dropped out of the I-PCIT group after randomization but before beginning treatment. Dropout rates differed significantly between the I-PCIT and time-limited PCIT groups ($\chi^2 = 6.68, p < .05$), such that families randomized to time-limited PCIT were more likely to drop out of treatment, whereas families randomized to I-PCIT were more likely to drop out of the study

before beginning treatment. Father involvement did not significantly differ between the treatment groups ($\chi^2 = 0.04, p > .10$). It is important to note that 12% of parents in the time-limited group and 18% of parents in I-PCIT met mastery criteria during CDI, with no significant difference between groups ($\chi^2 = 1.10, p > .10$). Lastly, parents reported high levels of satisfaction across both time-limited PCIT (mean [M] = 4.96, $SD = .20$) and I-PCIT ($M = 4.80, SD = .41$). The results of noninferiority tests indicated that the I-PCIT group was not inferior to the time-limited PCIT group on parent-rated satisfaction.

Parenting Outcomes

As indicated in Table 2, significant changes were observed from pretreatment to posttreatment as well as pretreatment to follow-up for observed parenting skills, discipline strategies, and parenting stress across both groups. The results of the noninferiority tests indicated that the I-PCIT group was not inferior to the time-limited PCIT group for 4 out of the 5 parenting outcomes at posttreatment (i.e., DPICS “do skills,” Overreactivity and Laxness on the PS, Total Stress on the PSI-SF). At posttreatment, the only outcome that did not fulfill noninferiority was observed DPICS “don’t skills.” At follow-up, the I-PCIT group remained not inferior to the time-limited PCIT group for observed DPICS “do skills” and “don’t skills” and Total Stress on the PSI-SF. As shown in Figure 2, parents across both I-PCIT and time-limited PCIT significantly improved their parenting skills, displaying higher levels of “do skills,” $F(2, 58) = 97.40, p < .001$, and lower levels of “don’t skills,” $F(2, 58) = 81.15, p < .001$, during child-led play. Additionally, parents exhibited significantly more effective discipline strategies, as measured by reported decreased levels of Laxness, $F(2, 58) = 18.14, p < .001$, and Overreactivity, $F(2, 58) = 36.27, p < .001$, and lowered Total Stress, $F(2, 58) = 29.43, p < .001$. Only one significant Time \times Group interaction persisted when including follow-up analyses for the Laxness scale, $F(2, 58) = 6.88, p < .01$, such that parents in the time-limited PCIT group reported higher levels of Laxness ($M = 2.96$, standard error [SE] = .18) than parents in the I-PCIT group ($M = 2.35, SE = .18$) at pretreatment. No other Group \times Time interactions emerged.

Child Behavior Outcomes

Similar to the parenting outcomes (see Table 2), significant changes were observed from pretreatment to posttreatment as well as pretreatment to follow-up in parent-reported externalizing behavior problems and observed compliance across both groups. The results of the noninferiority tests indicated that the I-PCIT group was not inferior to the time-limited PCIT group for both child outcomes at posttreatment (i.e., ECBI and DPICS Compliance). I-PCIT remained not inferior to time-limited PCIT at follow-up on DPICS Compliance scores. As shown in Figure 3, parents in both I-PCIT and PCIT reported decreased levels of child externalizing behavior problems, $F(2, 58) = 112.88, p < .001$, and increased levels of compliance, $F(2, 58) = 7.79, p < .01$, were observed during structured assessments following treatment. However, a significant Group \times Time interaction emerged for levels of parent-reported child externalizing behavior problems, $F(2, 58) = 9.40, p < .01$, such that parents in the time-limited PCIT group rated their children as having lower levels of externalizing behavior problems at the follow-up assessment ($M = 52.66, SE = 1.68$) compared with parents in the I-PCIT group ($M = 57.84, SE = 1.70$). However, no Group \times Time interaction emerged for observed compliance.

Moderation Analyses

Moderation analyses revealed a significant interaction between parental stress on the PSI-SF at posttreatment and treatment-group membership in predicting posttreatment child behavior problems on the ECBI ($R^2 = .06$, $b = -.18$, $p < .05$), after controlling for initial levels of parent stress and child behavior. Specifically, for parents with higher levels of parental stress, membership in the intensive treatment group was significantly associated with lower levels of child behavior problems, $t = -2.73$, $p < .01$ (see Figure 4). Treatment group was not significantly associated with child behavior problems at posttreatment for parents with lower levels of parental stress, $t = .81$, $p = .42$. Lastly, no moderation effects were found during the follow-up assessment.

Discussion

This is the first randomized trial, to our knowledge, to examine the comparative efficacy of condensing an established evidence-based BPT for childhood externalizing behavior problems such as PCIT within a briefer, more intensive format (60- to 90-min sessions held 5 days/week for 2 weeks). Families randomized to I-PCIT were less likely to initiate treatment; however, once engaged, these families were more likely to complete treatment when compared with the time-limited PCIT group. Additionally, noninferiority analyses indicated that both treatment groups made comparable improvements on 6 out of 7 parenting and child outcomes at posttreatment. After 6 to 9 months following completion of treatment, both groups still had significant improvements compared with pretreatment, with only one outcome favoring time-limited PCIT (i.e., parent report of child externalizing behavior). The implications of our findings are further discussed in this section.

The important issue of attrition within PCIT studies is inherently intertwined with the traditional requirement of parents meeting mastery criteria to progress and/or complete treatment. In fact, the largest PCIT study ($n = 1,318$) recently conducted by Lieneman and colleagues (2019) indicates that with the requirement of mastery, only 25.5% of families were able to graduate from treatment, with some families taking 71 sessions to complete treatment. Thus, a portion of the large attrition rates found in past PCIT studies may be attributed to the requirement of mastery, which can extend treatment length. In the current study, our time-limited PCIT group had an attrition rate of only 17%, which is lower than typical PCIT rates of ~40% (Danko et al., 2016; McCabe & Yeh, 2009; Werba et al., 2006). More impressively, the I-PCIT group had significantly better attrition rates (3%) compared with the time-limited PCIT group. The unique in vivo training aspect of PCIT may play a role in enhancing family motivation because parents observe changes in their own skills and the impact that these changes can have on improving their child's behavior and reducing their functional impairment. This may have been amplified for parents in the I-PCIT group because the frequency of sessions allowed parents to progress through the skills faster and see improvements in a shorter period of time. Coming to sessions every weekday for 2 weeks in I-PCIT may also limit the pitfalls of traditional PCIT where parents struggle to complete weekly homework, which is linked to treatment success (Ros, Graziano, & Hart, 2017; Stokes et al., 2016). Finally, seeing a therapist more frequently within a shorter period of time may alleviate parental stress and help build rapport faster.

In terms of targeting parenting, noninferiority tests indicated that I-PCIT was comparable to time-limited weekly PCIT on 4 out of 5 outcomes. Both interventions similarly improved parents' positive parenting skills, as indicated by both observational measures and self-report. Specifically, parents were able to learn and implement greater use of positive "do skills," such as labeled praise and behavioral descriptions, as well as be more consistent and stay calmer when implementing discipline. Additionally, similar reductions in parental stress were also found posttreatment across both groups. Although observed "don't skills" (i.e., negative verbalizations and directives during child-led play) did not meet the noninferiority threshold, both the time-limited PCIT and I-PCIT groups made significant improvements in this domain from pre- to posttreatment. Importantly, improvements in parenting skills, discipline strategies, and parenting stress were maintained 6–9 months after treatment completion. Of note, only two outcomes at follow-up (parent report of laxness and overreactivity) did not meet the noninferiority thresholds. It may be the case that the long-term consolidation of changes in parental discipline practices, such as being more consistent and calmer when disciplining, is more effective when learning such skills via distributed practice over a longer period of time. Although various BPT models, including traditional and time-limited PCIT, have been successful in targeting parenting (Bagner & Eyberg, 2007), our study contributes to the literature by showing that I-PCIT can not only change these parenting mechanisms within a short period of time but also that such improvements are generally maintained 6–9 months later.

As it relates to child outcomes, noninferiority tests indicated that I-PCIT was comparable to time-limited weekly PCIT in reducing children's externalizing behavior problems as measured by both observation and parent report from pre- to posttreatment. However, parent report of externalizing behavior problems for children in the time-limited group remained significantly lower at follow-up compared with the I-PCIT group. Of note, families in the I-PCIT group still made significant improvements from pretreatment to follow-up. Observed compliance improvements remained comparable across time points for both groups. Anecdotally, parents in the I-PCIT group reported wanting more treatment at follow-up compared with the weekly PCIT group even though the dosage of treatment was the same, which may account for a slightly worse parent report. On the other hand, it may be the case that more distributed practice in engaging in newly learned skills led parents to feel more competent and perceive fewer behavioral difficulties in their children. There is some work within the educational literature as well as among children with anxiety showing the benefits of such distributed practice versus massed practice (Chambless, 1990; Donovan & Radosevich, 1999). However, there is limited work examining these different learning models within BPT. Because observation measures indicated that children in the I-PCIT group maintained treatment gains through follow-up, future work should examine the incremental benefit of providing booster sessions upon completion of I-PCIT in terms of helping parents feel more supported.

Overall, the results provide preliminary evidence for I-PCIT being a viable treatment option for parents. In efforts to increase cost-effectiveness, transportability, and treatment retention, BPT programs have been shortened and/or adapted within community and primary care settings (Shaw, Dishion, Supplee, Gardner, & Arnds, 2006; Turner & Sanders, 2006). Within PCIT, several time-limited adaptations, ranging from traditional in-person sessions to the use

of telephone consultations, have shown comparable parent and child outcomes (Mersky et al., 2016; Nixon et al., 2003; Thomas & Zimmer-Gembeck, 2012). However, outside of a four-session primary care prevention adaptation (Berkovits et al., 2010), these past PCIT time-limited studies still lasted from 9 to 12 weeks, with limited follow-up periods and/or observational measures. Our findings mark the first successful demonstration of a shorter *and* intensive version of PCIT delivered within 2 weeks that yields positive changes in parenting and child behavior that are maintained 6–9 months after treatment. Future work should also examine how our 10-session time-limited PCIT and I-PCIT adaptations compare with traditional PCIT, where parents must meet mastery criteria before progressing and completing treatment.

In terms of clinical implications, the current study highlights how a brief and intense PCIT intervention within a 2-week period can maximize retention while maintaining comparable efficacy across almost all outcomes compared with time-limited weekly PCIT. Of note, moderation analyses indicated that parents experiencing high levels of stress benefited more from I-PCIT in terms of decreasing child externalizing behavior compared with time-limited PCIT. Given that maternal distress is also identified as one of the greatest predictors of treatment dropout during traditional PCIT (Fernandez & Eyberg, 2009), I-PCIT may be a better treatment option for families experiencing high levels of stress. Families that are experiencing high distress may be particularly in need of an intervention that produces behavioral changes within a shorter time frame. Future work should examine the cost-effectiveness of I-PCIT, given that it can be completed in 2 weeks, as well as its transportability to other settings (e.g., home). It is also important to point out that it may be challenging for some families to come to treatment every weekday for 2 weeks, which may explain why our I-PCIT group had four families drop out before treatment began. When viewed in conjunction with recent work highlighting that even attending a limited number of traditional weekly PCIT sessions (i.e., at least four prior to dropping out) benefits families (Lieneman et al., 2019), it appears that a flexible treatment approach, in which families are provided with a choice in the format of PCIT they receive, would optimize treatment engagement.

There are limitations to the current study that need to be addressed. First, our sample was homogeneous (85% Latinx), preventing us from generalizing our conclusions to families of other ethnic backgrounds. However, Latinx children represent the fastest-growing group in the United States but are understudied in child intervention research (La Greca, Silverman, & Lochman, 2009), with our results lending support for the cross-cultural flexibility of PCIT. Given that the follow-up period was only 6–9 months, longer follow-up periods would provide more insight into long-term maintenance of treatment gains based on observation and parent report. Another limitation was the lack of data on children's behavior at school to measure the generalization of treatment effects. Although generalizing effects of traditional PCIT to the school setting have been reported (Funderburk et al., 1998), it would be important to determine if I-PCIT yields similar generalization. Additionally, consistent with most PCIT trials and due to the young age range of participants, our study only required a clinical level of externalizing behavior problems rather than a formal diagnosis. However, previous studies have highlighted a moderate to high correlation between elevated levels on the ECBI and a diagnosis of a disruptive behavior disorder (DBD; Rich & Eyberg, 2001).

Nevertheless, it will be important for future work to examine how young children diagnosed with a DBD respond to I-PCIT.

An additional important limitation to consider is our relatively small sample size and limited power to conduct noninferiority tests. Guidelines recommend a sample size of over 1,000 to achieve high levels of power (.80) with an equivalence margin of .20, as used in the current study (Walker & Nowacki, 2011). Although a sample size of over 1,000 families would not be feasible for a psychosocial intervention randomized controlled trial, larger samples are nonetheless needed. It is also important to note that families that completed treatment did not differ significantly from families that dropped out of the study on demographic or pretreatment study variables. However, families that completed treatment and follow-up assessments may have had more positive outcomes than those who completed treatment and did not complete a follow-up assessment. Lastly, father involvement was limited in our sample (<17%) and did not allow for comparative analyses. Because father engagement is an important component of therapy, future work should focus on initiatives to increase father involvement within these adaptations of PCIT (Isaacs, Webb, Jerome, & Fabiano, 2015).

In summary, the current study focused on a novel and relatively unexplored research question by examining, via a randomized trial, the comparative efficacy of a briefer, more intensive version of an established BPT (i.e., PCIT) to improve young children's externalizing behavior problems. Our results provide preliminary evidence that I-PCIT is comparable to time-limited weekly PCIT across parenting and child behavioral measures. In terms of maintenance of gains, although I-PCIT continued to show medium to large effects across all treatment outcomes, it is important to acknowledge that time-limited PCIT did have better maintenance of gains based on parent report of externalizing behavior problems. I-PCIT offers some advantages in terms of better treatment engagement, with only 3% of families dropping out. Finally, I-PCIT appears to be a promising treatment option for families experiencing high levels of stress, in terms of targeting early externalizing behavior problems within a short period of time. Future work should examine, within a larger heterogeneous sample, which families would benefit most from I-PCIT as our clinical field moves toward a personalized medicine approach. Part of this movement is examining the extent to which novel adaptations of treatments such as I-PCIT may be a transdiagnostic treatment option.

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What is the public health significance of this article?

This study provides evidence that a well-established early intervention program like Parent-Child Interaction Therapy (PCIT) can be delivered in a briefer, more intensive package (I-PCIT) with comparable benefits to time-limited PCIT. Parents with high levels of stress may particularly benefit from I-PCIT.

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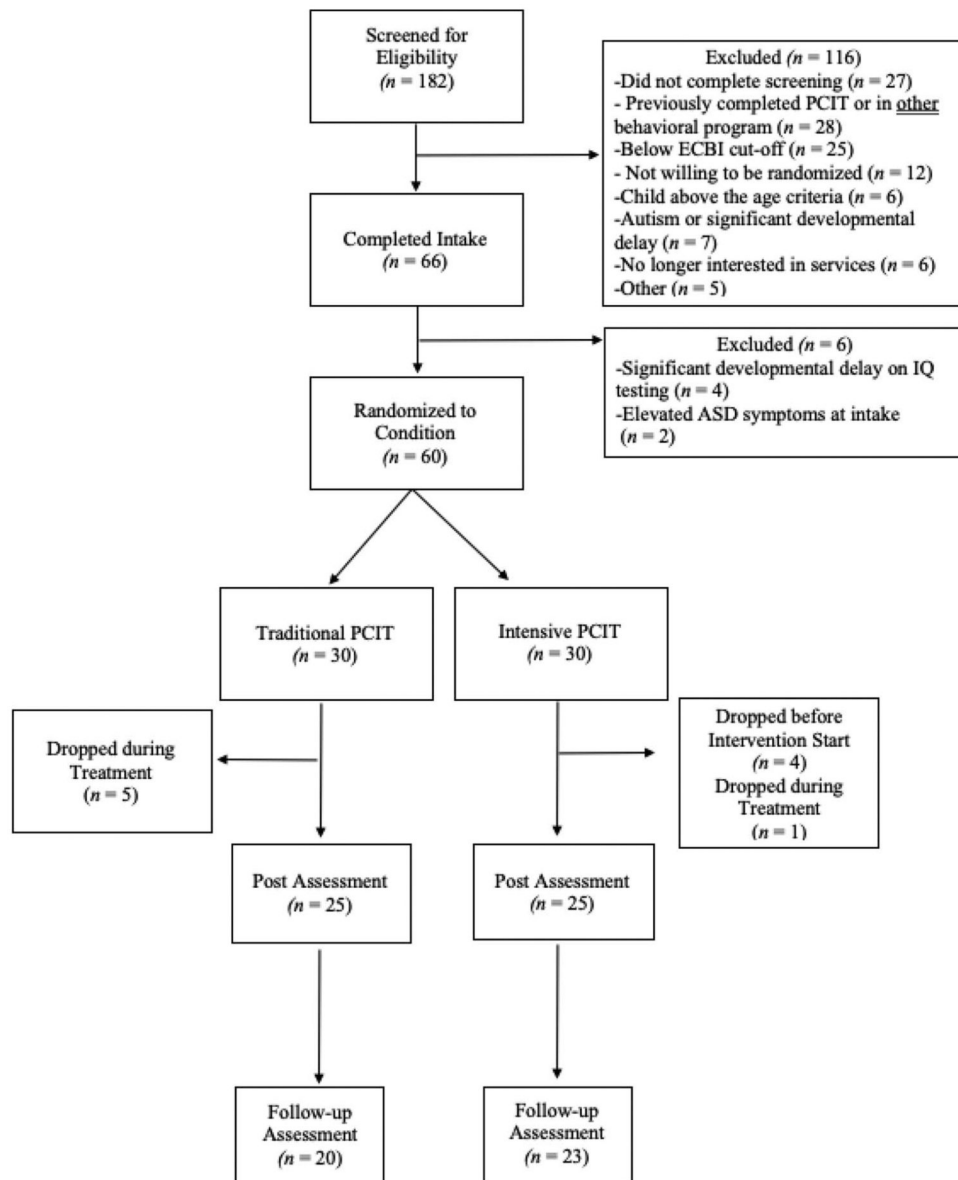


Figure 1. CONSORT flow diagram. ECBI = Eyberg Child Behavior Inventory; PCIT = Parent-Child Interaction Therapy.

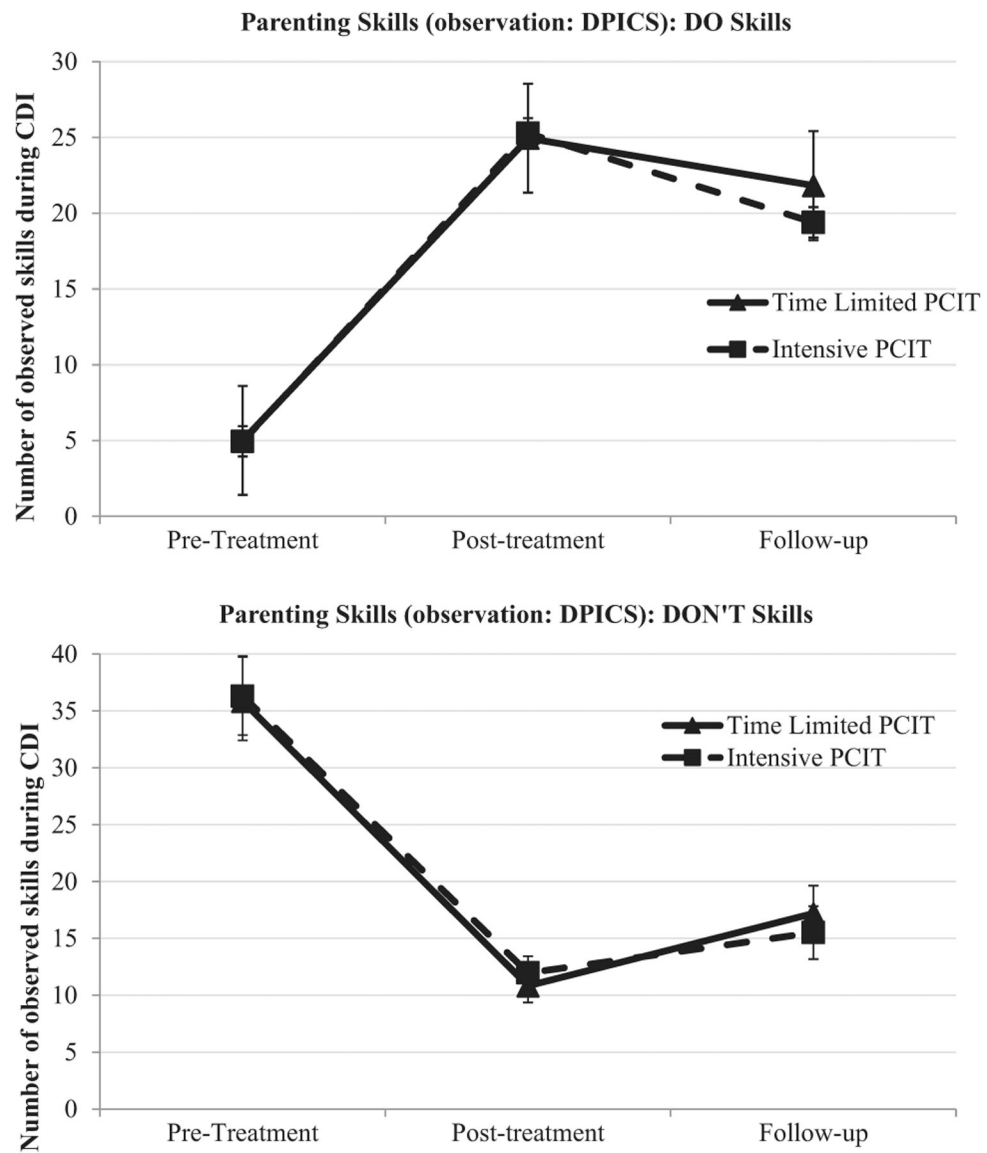


Figure 2. Results of parenting skills (observational). CDI = child-directed interaction; DPICS = Dyadic Parent Interaction Coding System; PCIT = Parent-Child Interaction Therapy.

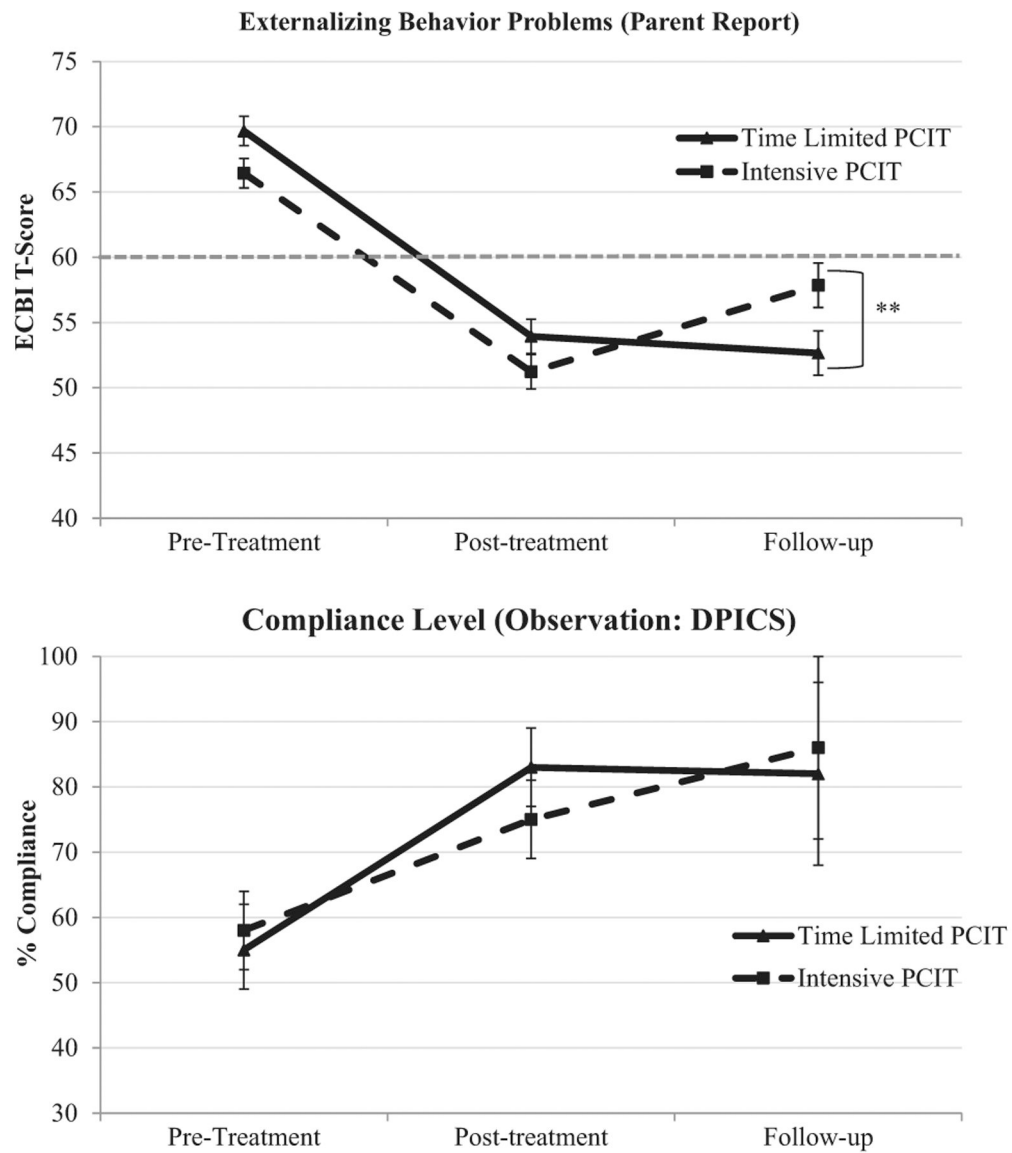


Figure 3. Results for externalizing behavior problems (parent) report and child compliance across cleanup task. ECBI = Eyberg Child Behavior Inventory; DPICS = Dyadic Parent Interaction Coding System; PCIT = Parent-Child Interaction Therapy. Clinical cutoff score is depicted by dashed gray line representing a T score of 60. ** $p < .01$.

Moderating Effect of Parental Stress Between Treatment Groups

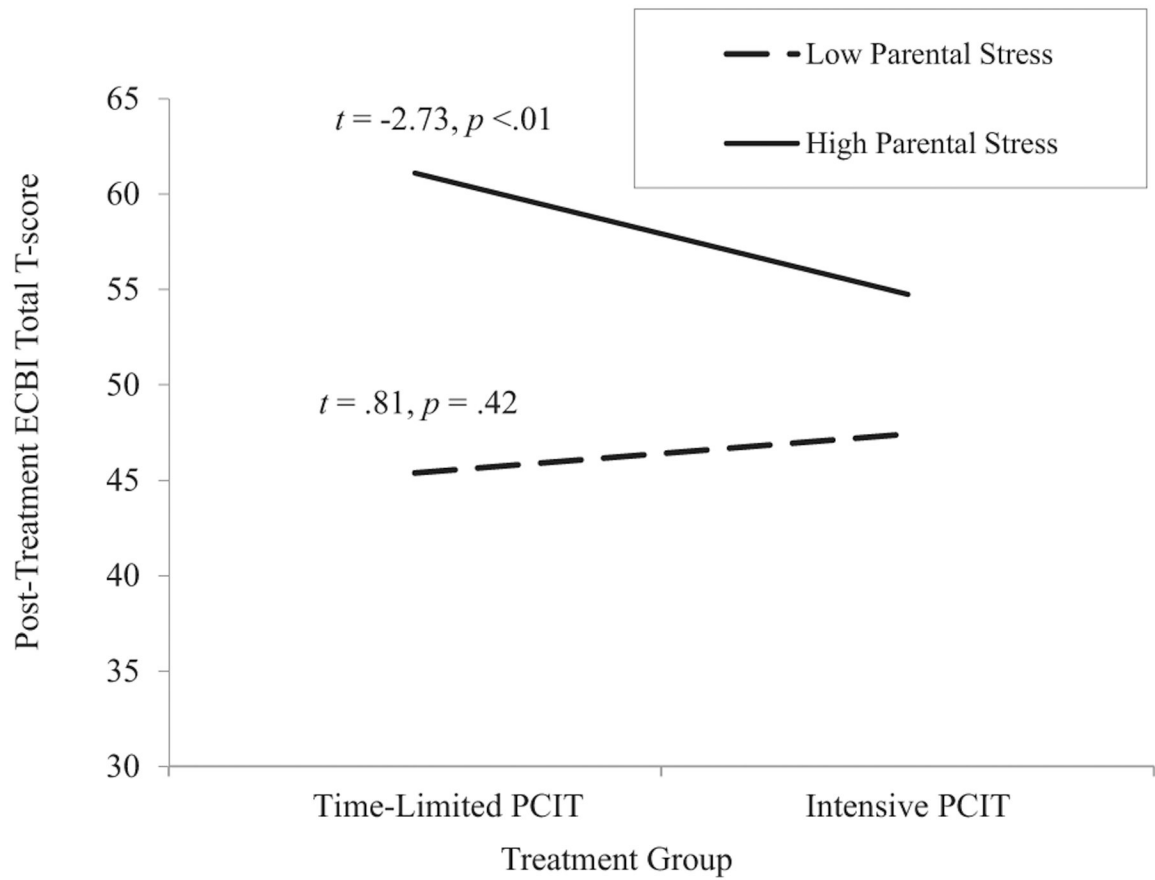


Figure 4.

Results of moderating effect of parent stress between treatment groups in predicting posttreatment child behavior problems on the ECBI. ECBI = Eyberg Child Behavior Inventory.

Table 1

Descriptive Statistics for Demographics and Inclusion Measures

Demographic variables	Total sample		PCIT		I-PCIT		<i>T</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Child age	4.33	1.29	4.25	1.10	4.40	1.47	-.43
Child IQ	96.95	13.33	98.20	14.96	95.69	11.60	.72
Parent age	36.90	5.41	36.33	5.38	37.47	5.38	-.80

	Total sample, %	PCIT, %	I-PCIT, %	χ^2
Sex (male)	65	60	70	.66
Ethnicity (Hispanic/Latino)	85	77	93	3.26
Household income				7.28
<\$20,000	17	23	1	
\$20,000–35,000	12	1	17	
\$35,000–50,000	15	17	13	
\$50,000–95,000	27	27	27	
\$80,000–\$110,000	5	1	1	
>\$110,000	14	13	13	

Note. PCIT = Parent-Child Interaction Therapy; I-PCIT = intensive version of Parent-Child Interaction Therapy. *T* and χ^2 values represent comparisons between PCIT and I-PCIT groups on demographic variables.

Table 2

Summary of Results

Outcomes	Pretreatment	Posttreatment	Follow-up	Time effect <i>F</i> (pre-post)	Time × Group <i>F</i> (pre-post)	Time effect <i>F</i> (pre-post-follow)	Time × Group <i>F</i> (pre-post-follow)	Pre-Post <i>d</i>	Pre-Follow <i>d</i>	Post-Follow <i>d</i>
Parenting measures										
DPICS: "Do skills" (O)				185.10 ^{***}	.16	97.40 ^{***}	.57			
PCIT	5.01 (.84)	24.95 (2.29)	21.83 (2.51)					2.15	1.67	-.24
I-PCIT	4.95 (.83)	25.28 (2.04) ^a	19.40 (2.49) ^a					2.42	1.45	-.48
DPICS: "Don't skills" (O)				115.94 ^{***}	.10	81.15 ^{***}	.40			
PCIT	35.84 (4.00)	10.83 (1.54)	17.19 (2.44)					-1.53	-1.05	.58
I-PCIT	36.30 (3.43)	11.97 (1.46)	15.51 (2.32) ^a					-1.71	-1.32	.34
PS: Discipline strategies: Laxness (P)				33.73 ^{***}	6.92 ^{**}	18.14 ^{***}	6.88 ^{**}			
PCIT	2.96 (.18)	1.95 (.16)	1.97 (.17)					-1.10	-1.05	.02
I-PCIT	2.35 (.18)	1.97 (.17) ^a	2.23 (.18)					-.40	-.12	.28
PS: Discipline strategies: overreactivity (P)				69.06 ^{***}	.87	36.27 ^{***}	1.64			
PCIT	3.20 (.14)	2.27 (.17)	2.47 (.20)					-1.11	-.79	.20
I-PCIT	3.41 (.14)	2.26 (.17) ^a	2.83 (.19)					-1.37	-.65	.59
PSI-SF: Parenting stress total raw score (P)				41.06 ^{***}	.14	29.43 ^{***}	.34			
PCIT	88.17 (3.55)	69.00 (3.69)	68.67 (5.02)					-.98	-.83	-.01
I-PCIT	87.37 (3.55)	70.02 (3.75) ^a	71.15 (4.42) ^a					-.88	-.75	.05
Child behavior measures										
ECBI: Externalizing behavior problems (P)				198.48 ^{***}	.07	112.88 ^{***}	9.40 ^{**}			
PCIT	69.67 (1.13)	53.93 (1.31)	52.66 (1.68)					-1.48	-2.21	-.16

Outcomes	Pretreatment	Posttreatment	Follow-up	Time effect <i>F</i> (pre-post)	Time × Group <i>F</i> (pre-post)	Time effect <i>F</i> (pre-post-follow)	Time × Group <i>F</i> (pre-post-follow)	Pre-Post <i>d</i>	Pre-Follow <i>d</i>	Post-Follow <i>d</i>
I-PCIT	66.43 (1.13)	51.22 (1.31) ^a	57.84 (1.70)					−2.31	−1.11	.81
DPICS: Compliance% (O)				16.00 ^{***}	1.16	7.79 ^{**}	.74			
PCIT	.55 (.07)	.83 (.06)	.82 (.14)					.80	.46	−.02
I-PCIT	.58 (.06)	.75 (.06) ^a	.86 (.14) ^a					.53	.48	.19
Treatment satisfaction (total TAI score)										
PCIT	—	4.96 (.04)	—	—	—	—	—	—	—	—
I-PCIT	—	4.80 (.08) ^a	—	—	—	—	—	—	—	—

Note. DPICS = Dyadic Parent Interaction Coding System; O = observational measure; PCIT = Parent-Child Interaction Therapy; I-PCIT = intensive version of Parent-Child Interaction Therapy; PS = Parenting Scale; P = parent-report measure; PSI-SF = Parenting Stress Index-Short Form; ECBI = Eyberg Child Behavior Inventory; TAI = Therapy Attitude Inventory. Values enclosed in parentheses represent standard errors. The individual DPICS skills categories did not significantly differ across treatment groups at any assessment period.

^aOne-sided *t* test indicated statistically noninferior results for I-PCIT compared with time-limited PCIT at posttreatment ($\delta = 20\%$ of the time-limited PCIT condition mean).

**
 $p < .01$.

 $p < .001$.