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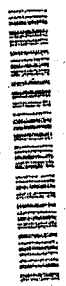
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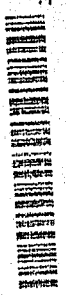
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The Effectiveness of Parent–Child Interaction Therapy for Victims of Interparental Violence

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This study compares the effectiveness of Parent–Child Interaction Therapy (PCIT) in reducing behavior problems (e.g., aggression, defiance, anxiety) of 62 clinic-referred, 2- to 7-year-old, maltreated children exposed to interparental violence (IPV) with a group of similar children with no exposure to IPV ($N = 67$). Preliminary analyses showed that IPV-exposed dyads were no more likely to terminate treatment prematurely than non IPV-exposed dyads. Results of repeated-measures MANCOVAs showed significant decreases in child behavior problems and caregivers' psychological distress from pre- to posttreatment for IPV-exposed and IPV nonexposed groups, and no significant variation by exposure to IPV. Stress in the parent role related to children's difficult behaviors and the parent–child relationship decreased from pre- to posttreatment, but parental distress did not decrease significantly over the course of PCIT. Results of an analysis testing the benefits of a full course of treatment over the first phase of treatment showed that dyads completing the full course of treatment reported significantly greater improvements in children's behavior problems than those receiving only the first phase of treatment.

Keywords: interparental violence; parent–child interaction therapy; treatment outcomes

Children exposed to interparental violence (IPV) are considered at risk for adverse outcomes because of the heightened likelihood of being maltreated themselves (Jaffe, Wolfe, & Wilson, 1990), the trauma and distress connected with witnessing chronic interparental violence (Graham-Bermann & Levendosky, 1998), and the disruption of the parent–child relationship (Erel & Burman, 1995; Margolin, Gordis, Medina, & Oliver, 2003). Mega- and meta-analyses of research on children with chronic exposure to IPV show that these children have more externalizing behavior problems (e.g., aggressive, defiant, destructive behavior), depression, and other psychopathology compared to children with no exposure to IPV (Sternberg, Baradaran, Abbott, Lamb, & Guterman, 2006; Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003). Furthermore, without intervention, the effects of exposure to interparental violence (IPV) have been found to persist, relating to risks of delinquent behavior in adolescence (Carlson, 1990) and violent behavior in adulthood (Sugarman & Hotaling, 1989). The purpose of this study is to examine the effectiveness of Parent–Child

Interaction Therapy (PCIT) in meeting the needs of mother-child dyads exposed to IPV by reducing children's behavior problems and decreasing mothers' distress.

BACKGROUND LITERATURE

There is little consensus among domestic violence experts on suitable treatments for children exposed to IPV (Davies & Krane, 2006). This lack of consensus likely results from the tension between advocates for mothers experiencing intimate partner violence and advocates for their children. Interviews of child protection workers and advocates for women with a history of intimate partner violence conducted by Beeman, Hagemester, and Edleson (1999) revealed that the child protection workers were likely to hold mothers accountable for children's safety. In contrast, women's advocates believed that mothers should set their own goals and make their own decisions about their family's safety. Furthermore, advocates of women with a history of intimate partner violence argue that children's mental health needs should not be separated from those of their mothers (Davies & Krane, 2006), while child advocates argue that the mothers' noncompliance with safety plans contributes to children's mental health problems (Beeman, et al., 1999). Other scholars argue that both camps oversimplify a set of varied and complex family dynamics, instead advocating a "both/and" approach (e.g., Buchbinder & Eisikovits, 2004; Goldner, Penn, Sheinberg, & Walker, 1990).

As outlined by Goldner et al. (1990), the "both/and" approach to conceptualizing the experience of intimate partner violence describes women's roles both as victimized by violence and participants in the violence. They describe women's roles as part of a complex and interactive family system, influenced strongly by the power of gender roles. Furthermore, by building a theoretical model that allows women multiple roles in family violence, Goldner and colleagues allow us to ask how women's parental roles and relationships with their children fit into a violent family system.

Like their mothers, children living in violent homes are also victims and participants in the violence, and hence active parts of a victimized/victimizing family system. Children witness and often participate in interparental violence. In a study of 114 abused women, Edleson, Mbilinyi, Beeman, and Hagemester (2003) found that nearly a quarter of children were physically involved in the violent episodes; and the more severe the violence, the greater the likelihood that the child would be physically involved. More than half were thought to have witnessed the violence. Like mothers, research has shown that young children exposed to IPV may show PTSD symptoms (Lieberman, Van Horn, & Ippen, 2005) and manifest anger, aggression, and defiance (Litrownik, Newton, Hunter, English, & Everson, 2003), making them difficult to parent. A meta-analysis of studies investigating the co-occurrence of interparental violence and child physical abuse (Appel & Holden, 1998) reported that some studies have shown that mothers with a history of IPV have victimized their children. Stephens (1999) found that mothers may perceive their children's aggressive behavior as victimizing. Thus, we see that both mothers' and children's roles in violent families are both parallel and interconnected: they can be victimizers as well as victims and they both show poor psychological outcomes, particularly in their relationships with one another. Hence, treatment focusing on this relationship may be beneficial for mothers and children exposed to IPV.

Targeting the parent-child relationship has been established in randomized clinical trials as an efficacious method for reducing children's behavior problems in oppositional and defiant toddlers and young children (Eyberg, 1988), maltreated children (Chaffin et al.,

2004; Toth, Maughan, Manly, Spagnola, & Cicchetti, 2002), and toddlers with depressed mothers (Toth, Rogosch, Manly, & Cicchetti, 2006). Studies of the effectiveness of treatments targeting the parent-child relationship reported reductions in parental stress and parents' psychological symptoms (e.g., Lieberman et al., 2005; Timmer, Urquiza, McGrath, & Zebell, 2005). In fact, in a study of the efficacy of Child-Parent Psychotherapy of mothers and preschool-aged children exposed to IPV, Lieberman and her colleagues (2005) reported greater reductions in mothers' posttraumatic stress symptoms in the dyad-oriented therapy compared to individual therapy. These studies attest to the usefulness to both mothers and children of therapies focusing on their dyadic relationship rather than their individual mental health needs.

Parent-Child Interaction Therapy

Parent-Child Interaction Therapy (PCIT) is a 14- to 20-week, manualized intervention founded on social learning and attachment theories. PCIT is designed for children between 2 and 7 years of age with externalizing behavior problems (Eyberg & Robinson, 1983). The underlying model of change is similar to that of other parent-training programs, asserting that by providing parents with behavior modification skills, they become the agent of change in reducing their child's behavior problems, which in turn promotes more positive parenting. PCIT incorporates both parent and child in the treatment sessions and uses live, individualized therapist coaching for an idiographic approach to changing the dysfunctional parent-child relationship.

PCIT is conducted in two phases. The first phase focuses on enhancing the parent-child relationship (often described as Child-Directed Interaction or CDI), and the second on improving child compliance (often described as Parent-Directed Interaction or PDI). Both phases of treatment begin with an hour of didactic training, followed by sessions in which the therapist coaches the parent during play with the child. From an observation room behind a two-way mirror, via a "bug-in-the-ear" receiver that the parent wears, the therapist provides the parent with feedback on their use of the skills. Parents are taught and practice specific skills of communication and behavior management with their children. In addition to practicing these skills during clinic sessions, parents are asked to practice with their children at home for 5 minutes every day.

In CDI (typically 7-10 sessions), parents are coached to follow their children's lead in play by describing their activities, reflecting their appropriate verbalizations, and praising their positive behavior. By the end of CDI, parents generally have shifted from rarely noticing their children's positive behavior to more consistently attending to or praising appropriate behavior. When caregivers master the skills taught in CDI by demonstrating that they can give 25 behavior descriptions (e.g., "You are building a tall tower"), reflections (i.e., repeating back or paraphrasing the child's words), and 15 praises (e.g., "Thank you for playing so gently with these toys"), with no more than 3 instances of asking a question, giving a command, or criticizing their child in a 5-minute assessment, they move to the second phase of treatment.

In PDI (typically 7-10 sessions) therapists train parents to give only essential commands, to make them clear and direct, maximizing chances for compliance. Parents participating in PCIT traditionally learn a specific method of using time-out for dealing with noncompliance. Parents also may be taught "hands-off" strategies (e.g., removal of privileges) if indicated. These strategies are designed to provide caregivers tools for managing their children's behavior while helping them to avoid using physical power and to focus instead on using positive incentives and promoting children's emotional regulation. Mastery of behavior management skills during PDI is achieved when therapists observe

that caregivers are able use the behavior management strategies they were taught without being coached and when parents report that these strategies are effective. By the end of PDI, the process of giving commands and obtaining compliance are predictable and safe for parents and children.

There have been numerous studies demonstrating the effectiveness of PCIT for reducing child behavior problems (e.g., Eyberg, Funderburk, Hembree-Kigin, McNeil, Querido, & Hood, 2001), and positive effects have been maintained for up to 6 years posttreatment (Hood & Eyberg, 2003).

Purpose of the Present Study

The purpose of this study is to examine the effectiveness of Parent-Child Interaction Therapy (PCIT) in meeting the mental health needs of mother-child dyads exposed to IPV by reducing children's behavior problems and mothers' stress and psychological symptoms. If the traumatic effects of IPV make PCIT unsuitable for this population, we should observe greater attrition in the IPV-exposed group and reduced treatment effectiveness, as indicated by changes from pre- to posttreatment in standardized measures of child behavior problems, parental stress, and parental psychological symptoms. We use a sample of mother-child dyads considered high-risk because of their connection with child welfare services, and varying in their exposure to IPV. Before investigating pre- to posttreatment changes in symptoms, we will examine predictors of attrition to see whether dyads exposed to IPV are any more likely to drop out of PCIT than dyads with no exposure to IPV. We will compare pre- and posttreatment levels of child behavior using repeated measures multivariate analyses of covariance (MANCOVA) to test for treatment effectiveness. In an effort to determine whether participation in the first phase of treatment (i.e., relationship enhancement) is sufficient for reducing children's behavior problems, we will repeat the MANCOVA, testing for treatment effectiveness, but including dyads that only completed the first phase of treatment. All analyses will control for differences observed between IPV and non-IPV exposed dyads.

METHOD

Sample Description

A sample of 129 mother-child dyads was used to examine the effectiveness of PCIT. These dyads were selected from a larger group of 342 biological mother-child dyads referred for PCIT for treatment of children's externalizing behavior problems between November 1994 and February 2007: 159 biological mother-child dyads had no known exposure to IPV and 178 had been exposed to IPV. Children were assessed to determine medical necessity and the appropriateness of PCIT. All met county-defined criteria for medical necessity, though this was not always reflected in the mothers' reports of their children's behavior problems. According to mothers' ratings of their children's behavior, 45% of children in this sample fell in the clinical range on the ECBI intensity and problem scales, leaving 55% as within normal limits. There are several reasons why mothers might underreport children's behavior problems. One is the desire to present oneself and one's child in a favorable light (Abidin, 1995); another is resistance to participating in treatment as a result of being court mandated to treatment combined with little internal motivation to participate (Prendergast, Farabee, Cartier, & Henkin, 2002). In the larger sample of PCIT participants, 77% of the sample was referred to treatment by their child welfare social worker; and 40% were court-

mandated to treatment. When asked on a demographic questionnaire (see description next) whether they thought their children needed to change and whether this treatment would help them, 72% of mothers were not convinced that their child needed to change much and 55% were not convinced that PCIT would be an effective treatment. Last, 18% scored in the clinical range of the Defensive Responding scale of the Parenting Stress Index, a rough measure of social desirability. These findings suggest that a substantial percentage of the sample may be motivated to underreport their children's problems.

Dyads were eligible for this study if the child was at least 2 and less than 8 years of age, the parent had completed at least one measure of child behavior problems and one measure of parent functioning, and had received at least one PCIT treatment session. We used the members of this larger group of dyads to answer questions about whether IPV-exposed dyads were any more likely to end treatment early than dyads with no IPV exposure. The treatment setting was a university hospital-based outpatient clinic primarily serving children with a history of maltreatment.

Description of Dyads Completing PCIT. Dyads that completed standard PCIT and submitted standardized measures pre- and posttreatment numbered 129. This sample consisted of 62 IPV-exposed mother-child dyads, and 67 nonexposed mother-child dyads. The children ranged in age from 2 to 8 years ($M = 4.6$ years; $SD = 1.5$). Two-thirds of the children were male (66.7%). Over half of caregivers and children were White/non-Hispanic (61% of children and 63% of caregivers), 13% of the children and 9% of mothers were African American, and 22% of children and their parents were Latino. None of the dyads exposed to IPV lived in a shelter; 17% were still living with their violent partner.

Procedures

Parents were mailed a battery of standardized measures and a short demographic questionnaire before they came to the clinic for the first time. Because PCIT is an assessment-based protocol, parents were asked to complete a battery of standardized assessments before beginning treatment. These same standardized measures were completed immediately post-treatment along with a client satisfaction questionnaire. A packet of measures was given to each caregiver in treatment during their last treatment session. The packet was either mailed to the clinic or collected by a home visitor when completed. Dyads were considered to have completed treatment after the parents were able to meet mastery criteria for the CDI portion of PCIT, able to handle their children's noncompliance using the strategies they learned in PDI without being coached, and children responded to their parents' efforts to manage their behavior. For example, if a child threw a tantrum when the parent gave a command and the parent could not help the child to recover sufficiently to resume play, they were not graduated. The average number of treatment sessions (including assessments) to treatment completion was 17.5 ($SD = 6.7$). This number did not vary by IPV status.

Measures

Child Behavior Checklist (CBCL). The CBCL (e.g., Achenbach, 2001) is a standardized instrument that lists approximately 100 problem behaviors that children might display (preschool version contains 100 items, school-age version contains 112 items). Parents or regular caregivers are asked to report on the frequency of problem behaviors in their children on a 3-point scale (0 = *never* to 2 = *often*). Separate norms are provided for boys and girls. Normative data were derived from a large sociologically diverse population of both nonreferred and clinic-referred children and their parents. We use the CBCL's two

broadband scales (Internalizing and Externalizing Behaviors) and the total score as a measure of the severity of children's symptoms. There are two versions of the CBCL: one is designed for young children (2–3 years old, Achenbach, 1994a; 1.5–5 years, Achenbach & Rescorla, 2000) and one for middle childhood and teen years (4–18 years, Achenbach, 1994b; 6–18 years, Achenbach, 2001). Therapists transitioned from the old to the new versions of the CBCL in 2003, and were careful to administer the same version at both assessment points, so that a dyad's pre- to posttreatment change would be measured by one version. The old and new versions of the broadband scales of the CBCL are highly correlated (Achenbach & Rescorla, 2000; Achenbach, 2001), and we do not differentiate scores from the two versions.

Eyberg Child Behavior Inventory (ECBI). The ECBI (Eyberg & Pincus, 1999) is a 36-item scale that measures behavior problems exhibited by children aged 2 to 16 years. In contrast to the CBCL, the ECBI lists behaviors more commonly associated with disruptive behavior disorders (e.g., dawdling, arguing or fighting with siblings, sassiness). Caregivers indicate the frequency of these behaviors along a 7-point scale (1 = *never* to 7 = *all the time*) and whether they perceive the behavior as a problem (1 = *yes*, 0 = *no*). Resulting scales reflect the Intensity and Number of Behavior Problems. The reliability and validity of the ECBI is well established (see Eyberg & Pincus, 1999, for a description of the validation studies). The two scales are highly correlated with the Externalizing Behavior Scale of the CBCL (Boggs, Eyberg, & Reynolds, 1990). The Number of Problems Scale is thought to reflect parents' tolerance for children's problem behaviors as well as indicate the severity of the problems (Eyberg & Pincus, 1999). Test-retest reliability estimates across a 3-week period yielded coefficients of $r = .86$ and $r = .88$ for the Intensity and Problem scales (Robinson, Eyberg, & Ross 1980).

Parenting Stress Inventory–Short Form (PSI-SF). The PSI-SF (Abidin, 1995) was designed to identify parent–child dyads that are experiencing stress and at risk for developing dysfunctional parenting and child behavior problems. The PSI-SF contains 36 items rated on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*), grouped into three scales: Parent Distress (PD), Parent–Child Dysfunctional Relationship (P-C Dys), and Difficult Child (DC). The Parent Distress Scale measures parents' feelings of distress (e.g., parent competence, depression, social isolation). This scale correlates strongly with an overall measure of parents' psychological symptom severity (SCL-90R/BSI's Global Severity Index: $r(285) = .47$, $N = 285$, $p < .001$). The Parent–Child Dysfunctional Relationship Scale reflects the degree to which the parent perceives the child as happy, healthy, enjoys being with the parent, and perceives their relationship as rewarding. The Difficult Child Scale measures the parents' perceptions of the child's moods, adaptability, and demandingness. This scale was strongly correlated with other measures of children's behavior problems, ECBI-Intensity Scale: $r(290) = .75$, $p < .001$; CBCL-Externalizing Behavior Problems: $r(296) = .71$, $p < .001$. Test-retest coefficients for the three PSI-SF scales were estimated for a sample of $N = 530$ across a 6-month period: PD, $r = .85$; P-C Dys, $r = .68$; DC, $r = .78$.

Symptom Checklist 90-R (SCL-90-R) and Brief Symptom Inventory (BSI). The SCL-90-R and the BSI are two self-report symptom inventories designed by Derogatis, 1993, 1994) to assess current presence of psychological symptom patterns. The SCL-90-R contains 90 items and the BSI has 52 items. Each measure has a brief description of a psychological symptom, which respondents rate on a 5-point scale (0 = *no discomfort* to 4 = *extreme discomfort*). Both the BSI and the SCL-90-R have nine symptom subscales: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety,

Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. We began using the BSI instead of the SCL-90-R in 2002 to reduce the amount of paperwork for parents. Derogatis (1993, p. 19) reported that the measures of the BSI and SCL-90-R were all highly correlated (all above $r = .90$). We use the Global Severity Index as an indicator of respondents' overall symptom severity and psychological functioning, as recommended by its authors (Derogatis & Lazarus, 1994). We do not distinguish between scores from the BSI and SCL-90-R. The test-retest reliability coefficient for this indicator, measured in a sample of $N = 60$ across a 2-week period, was $r = .90$.

IPV and Maltreatment History. Information about children's history of exposure to IPV, abuse, and neglect was obtained by review of the child's clinic file. The file contained therapists' reports, social workers' reports, court records, and therapists' clinical assessments, which contained information about the child's trauma history. Definitions of IPV vary greatly according to the needs of the user. For our purposes, the presence of violence in the home, including emotional violence (e.g., screaming arguments between parents), was sufficient to classify a child as "IPV exposed." The group of children exposed to IPV in this sample range from children who heard chronic, angry arguments (e.g., in the house, but not necessarily in the same room), to children who witnessed extreme violence (e.g., the mother stabbing the father) or were used as shields by one parent against the other's violence. Because we did not always have access to detailed information about family life, we were not able to use additional information about the violence (e.g., duration, severity) in analyses.

In California, allegations of abuse or neglect of a child are substantiated when the likelihood that a caregiver intentionally harmed or neglected a child in his or her care outweighs the likelihood that he or she did not. When there was an unsubstantiated possibility that a child might have been abused, we labeled the case as having "suspected maltreatment." A child might be coded with "suspected maltreatment" if an allegation of abuse or neglect was mentioned on a referral or other communication with a child welfare social worker or a caregiver. Children were classified as either having a suspected or documented history of maltreatment, or having no history of maltreatment. For purposes of this study, children with suspected and documented histories of maltreatment were both classified as having a history of maltreatment.

Data Analysis

The first step in analyzing the effectiveness of PCIT was to determine whether the mother-child dyads exposed to IPV were as likely to complete treatment as unexposed dyads. We argue that this type of analysis is important in a study that compares pre- and posttreatment measures of treatment participants as a way of estimating treatment effectiveness because treatment completers may be different from those who terminate treatment early in a way that predisposes them to be successful.

Second, we examined the differential effectiveness of PCIT for mother-child dyads exposed versus not exposed to IPV by performing repeated measures analyses of variance with assessment point as the within-subjects factor (i.e., pre- vs. posttreatment), and IPV group (exposure vs. no exposure) as between-subjects factors, covarying significant demographic differences between the groups.

Power of Analyses. Using an alpha of .05, an average sample size of 60 to 70 in our analyses of treatment effects was sufficient to detect medium to large effect sizes with a power of 0.80. The observed power reflects the likelihood that the result can be replicated

in other studies. For example, when the observed power equals 0.80, it is likely to be replicated in 80% of future studies (Cohen, 1988). In addition to the observed power of treatment effects, we present η^2 (eta-squared) for analyses of variance and ϕ (phi), statistics that indicate the proportion of variance accounted for by membership in the designated groups (i.e., the between-subjects factor). Eta-squared is roughly the square of f , the statistic measuring effect size in analyses of variance. According to Cohen (1988), a small effect size for an analysis of variance is $f = .10$ ($\eta^2 = .01$), a medium effect size is $f = .25$ ($\eta^2 = .06$), and a large effect size is $f = .40$ ($\eta^2 = .16$). In a 2×2 cross-tabulation, phi is equal to the effect size indicator, w (Cohen, 1988), in which a small effect size is $w = .10$, medium effect size is $w = .30$, and large effect size is $w = .50$.

RESULTS

Demographic Differences

Table 1 describes the demographic differences between IPV and non-IPV mother-child dyads in our sample ($N = 342$). Results showed that children in the two groups were similar in age, gender, and ethnicity. However, children exposed to IPV were significantly more likely to have been physically abused than children not exposed to IPV. Interestingly, both groups were equally likely to have been physically abused by their mothers, but children exposed to IPV were significantly more likely to have been abused by their fathers. Children exposed to IPV also were significantly more likely to have been neglected than the nonexposed group. Nearly 80% ($N = 152$) of all neglect allegations were for medical or physical neglect. Only 2% ($N = 4$) of mothers had been cited for failure to protect their children and 7% ($N = 13$) were cited for lack of supervision or endangerment. All four of those cited for failure to protect and two-thirds of those cited for endangerment were in the IPV-exposed group. Compared to children with no IPV exposure, children exposed to IPV were significantly more likely to have been prenatally exposed to alcohol or drugs (AOD). Mothers who had been in violent relationships were significantly more likely to report being single than mothers who had never been in violent relationships. The two groups of mothers did not differ in age or level of educational attainment. To sum up, the IPV-exposed and non-IPV exposed children in this sample were all clinic-referred for treatment of externalizing behavior problems and were similar in age, gender composition, and ethnic background. However, compared to the children with no history of IPV, the children exposed to IPV were significantly more likely to have been exposed to a range of other risks, including physical abuse, neglect, and exposure to alcohol and drugs.

Predicting Early Treatment Termination

Table 2 shows the results of a binomial logistic regression predicting early treatment termination. We included as predictors IPV exposure and descriptive characteristics that were found to differ significantly by IPV exposure: child's physical abuse and neglect history, having been physically abused by the biological father, prenatal exposure to drugs or alcohol, and mothers' marital status. Results showed that the experience of physical abuse *decreased* children's likelihood of terminating early by approximately 40% and physical abuse by fathers decreased children's likelihood of terminating early by another 60%. Results of this analysis also show that though the model significantly predicts early treatment termination, this only accounts for 7% of the variance in the dependent variable (Cox

TABLE 1. Descriptive Differences Between Children Exposed Versus Not Exposed to IPV

	No IPV History (<i>N</i> = 159)	IPV History (<i>N</i> = 178)	Effects
Sex of child (% male)	67.3%	60.7%	$\chi^2(1, 337) = 1.59; p = .21$
Age of child (in years)	4.63 (1.5)	4.47 (1.4)	$F(1, 336) = 1.02; p = .31$
Ethnicity of child			$\chi^2(1, 337) = 5.32; p = .15$
% White	59.7	48.3	
% African American	19.5	23.6	
% Latino/a	18.9	23.6	
% Other	1.9	4.5	
Age of mother (in years)	27.7 (5.9)	27.9 (5.5)	$F(1, 323) = 5.61, p = .68$
% mother—single marital status	64.6	75.4	$\chi^2(1, 339) = 4.72, p = .03, \phi = .14$
% mother—high school education or less	83.2	82.0	$\chi^2(1, 337) = 0.08, p = .79$
% physical abuse history	32.7	49.4	$\chi^2(1, 337) = 9.68, p = .002, \phi = .17$
% neglect history	50.3	62.9	$\chi^2(1, 337) = 5.44, p = .02, \phi = .13$
% sexual abuse history	8.5	14.7	$\chi^2(1, 337) = 3.47, p = .06, \phi = .10$
% mother physically abusive	20.8	18.5	$\chi^2(1, 337) = 0.39, p = .53$
% father physically abusive	5.0	19.1	$\chi^2(1, 337) = 15.32, p < .001, \phi = .20$
% prenatal exposure to AOD	36.5	56.7	$\chi^2(1, 337) = 13.8, p < .001, \phi = .25$
% maternal history of drug use	47.8	66.3	$\chi^2(1, 337) = 11.7, p < .001, \phi = .19$
% complete treatment	45.3	40.4	$\chi^2(1, 337) = 0.80, p = .37$

Note. IPV = interparental violence.

& Snell R^2), suggesting that neither IPV nor its associated risks account for significant variation in attrition.

Treatment Effects

We performed 2×2 repeated measures multivariate analyses of variance to test the likelihood that the treatment effects for IPV-exposed dyads would differ significantly from those of nonexposed dyads. The repeated measure was the assessment point (pre- vs.

TABLE 2. Results of Binomial Logistic Regressions of Early Treatment Termination: Odds Ratios and 95% Confidence Intervals (Lower/Upper)

	Early Treatment Termination (No/Yes)	
	Model 1	Model 2
<i>N</i> = 342	OR (95% CI)	OR (95% CI)
Exposure to IPV (no/yes)	1.22 (0.79/1.9)	1.40 (0.87/2.26)
Mother's marital status (ever married/single)		1.48 (0.90/2.40)
Physical abuse history		0.62* (0.38/1.03)
Father physically abusive		0.33*** (0.15/0.72)
Neglect history		1.38 (0.84/2.28)
Child prenatally exposed to AOD		1.14 (0.69/1.9)
-2 log likelihood	459.23	434.60
Model χ^2	0.00	24.63****
Cox & Snell R^2	0.002	0.07

Note. OR = odds ratio; CI = confidence interval; IPV = interparental violence; AOD = alcohol or drugs.

* $p < .10$. ** $p < .05$. *** $p < .01$.

posttreatment), and the between-subjects factor was IPV group (exposure vs. no exposure). To maximize the number of treatment completers included in analyses, we also included cases that were missing posttreatment assessments but had midtreatment assessments. Using the commonly used Last Observation Carried Forward (LOFC) technique for imputing missing data consisting of more than one time point, we substituted midtreatment assessments for posttreatment assessments when cases were missing the posttreatment assessment, covarying whether posttreatment assessments were missing. We also controlled for child's physical abuse and neglect history, having been physically abused by the father, prenatal exposure to drugs or alcohol, and mothers' marital status in all analyses of treatment effectiveness. We examined the intercorrelations of control variables to make sure that the linear model would not be threatened by multicollinearity. The control variables were not significantly correlated with one another, with the exception of children's physical abuse history and having been physically abused by the father (Pearson's $r = .49$, $p < .001$). However, the Variance Inflation Factor for these variables is $VIF = 1.35$ (well below the criterion level of 4.0) indicating a tolerable level of relatedness for a linear model. Differences in the numbers of dyads included in each analysis are a result of missing data on the pretreatment outcome measure.

Table 3 shows the mean levels of child behavior problems pre- and posttreatment for IPV-exposed and nonexposed dyads. Results of analyses of the ECBI intensity and problem scores showed strong treatment effects, overall $F(2, 110) = 22.16$, $p < .001$, $\eta^2 = .29$, observed power = 1.0. However, neither the reductions in intensity nor number of child behavior problems varied significantly by IPV exposure, overall $F(2, 110) = 1.86$, $p = .16$, $\eta^2 = .03$, observed power = 0.38. Results of analyses of the three CBCL broadband scales also showed significant treatment effects, overall $F(3, 114) = 10.96$, $p < .001$, $\eta^2 = .22$,

TABLE 3. Mean Levels of Child Behavior Problems Pre- and Posttreatment by Exposure to IPV

Exposure to IPV	No IPV	IPV	Effects ^a
	<i>M (SD)</i>	<i>M (SD)</i>	
ECBI-Intensity of problems	<i>N</i> = 63	<i>N</i> = 56	Tx: $F(1, 111) = 31.15, p < .001, \eta^2 = .22, \text{power} = 1.0$
Pretreatment	130.7 (37.5)	126.8 (43.3)	Tx × IPV: $F(1, 111) = 1.39, p = .24$
Posttreatment	83.3 (36.0)	90.0 (32.9)	
ECBI-Number of problems			Tx: $F(1, 111) = 41.21, p < .001, \eta^2 = .27, \text{power} = 1.0$
Pretreatment	15.1 (8.7)	15.4 (8.4)	Tx × IPV: $F(1, 111) = 0.27, p = .60$
Posttreatment	4.9 (6.4)	5.1 (7.0)	
CBCL-Internalizing	<i>N</i> = 65	<i>N</i> = 58	Tx: $F(1, 116) = 22.57, p < .001, \eta^2 = .16, \text{power} = 1.0$
Pretreatment	55.4 (9.8)	53.9 (11.6)	Tx × IPV: $F(1, 116) = 0.10, p = .75$
Posttreatment	45.4 (11.7)	45.1 (9.9)	
CBCL-Externalizing			Tx: $F(1, 116) = 24.71, p < .001, \eta^2 = .18, \text{power} = 1.0$
Pretreatment	60.4 (11.1)	60.3 (12.6)	Tx × IPV: $F(1, 116) = 0.002, p = .97$
Posttreatment	49.4 (13.5)	50.2 (10.0)	
CBCL-Total			Tx: $F(1, 116) = 21.48, p < .001, \eta^2 = .16, \text{power} = 1.0$
Pretreatment	59.2 (10.2)	57.8 (14.9)	Tx × IPV: $F(1, 116) = 0.01, p = .92$
Posttreatment	48.4 (13.2)	47.5 (10.4)	

Note. IPV = interparental violence.

^aTx = treatment, IPV = exposure to IPV (no/yes), Tx × IPV = treatment by IPV group.

* $p < .10$ (power < .50). ** $p < .05$ (power < .80). *** $p < .01$ (power > .80). **** $p < .001$ (power = 1.0).

observed power = 1.0, but did not vary significantly by IPV exposure, $F(3, 114) = 0.56, p = .64, \eta^2 = .01$, observed power = 0.16.

Analyses exploring the effects of participation in PCIT on parental distress are shown in Table 4. In addition to three measures of parent-role related stress, the PSI-SF contains a validation scale (Defensive Responding), which we included as a control in analyses of treatment effects on parental stress. Results showed a significant interaction between treatment and Defensive Responding on parental stress, $F(3, 75) = 4.79, p = .004, \eta^2 = .16$, observed power = .89, suggesting that parents reporting low levels of stress pretreatment (i.e., elevated levels of Defensive Responding) were less likely to show improvements in parental stress from pre- to posttreatment. We observed no further variation in the effects of PCIT on Parent-Child Relationship Dysfunction by exposure to IPV, overall $F(3, 75) = 2.08, p = .11, \eta^2 = .08$, observed power = .51.

TABLE 4. Means and Standard Deviations of Parental Distress Pre- and Posttreatment (Tx) by IPV Exposure

Exposure to IPV	No IPV	IPV	Effects ^a
	<i>M (SD)</i>	<i>M (SD)</i>	
SCL-90R-GSI (<i>T</i> scores)	<i>N</i> = 51	<i>N</i> = 47	Tx: $F(1, 91) = 4.31, p < .05, \eta^2 = .04,$ power = 0.51
Pretreatment	51.4 (12.1)	54.2 (13.0)	Tx × IPV: $F(1, 91) = 0.05, p = .83$
Posttreatment	45.4 (11.6)	46.1 (11.7)	
PSI-SF Difficult Child (percentile scores)	<i>N</i> = 39	<i>N</i> = 46	(Analyses include Defensive Responding Scale [DR])
Pretreatment	77.6 (26.1)	77.1 (28.6)	Tx: $F(1, 77) = 1.75, p = .04, \eta^2 = .05,$ power = 0.53
Posttreatment	61.1 (32.2)	53.9 (35.2)	Tx × IPV: $F(1, 77) = 0.21, p = .65;$ Tx × DR: $F(1, 77) = 0.1, p = .76$
PSI-SF Parent Distress (percentile scores)			
Pretreatment	52.3 (31.4)	48.8 (30.6)	Tx: $F(1, 77) = 1.58, p = .21;$ Tx × IPV: $F(1, 77) = 2.1, p = .15$
Posttreatment	40.3 (29.1)	39.2 (29.5)	Tx × DR: $F(1, 77) = 0.34, p = .57$
PSI-SF Parent-Child Relationship Dysfunction (percentile scores)			
Pretreatment	80.9 (20.7)	72.2 (27.0)	Tx: $F(1, 77) = 0.13, p = .72;$ Tx × IPV: $F(1, 77) = 0.54, p = .46$
Posttreatment	68.0 (27.2)	62.2 (31.2)	Tx × DR: $F(1, 77) = 10.42, p = .002, \eta^2 =$ $.12, \text{power} = 0.89$

Note. IPV = interparental violence; SCL-90R-GSI = Symptom Checklist 90-R-Global Severity Index; PSI-SF = Parenting Stress Inventory-Short Form.

** $p < .05$ (power < .80). *** $p < .01$ (power > .80). **** $p < .001$ (power = 1.0).

An analysis of the Global Severity Index (GSI) scores, measuring mothers' endorsement of psychological symptoms, showed a significant treatment effect, Tx: $F(1, 91) = 4.65, p = .03, \eta^2 = .05,$ power = 0.57, but no further variation by IPV exposure, Tx × IPV: $F(1, 91) = 0.12, p = .75, \eta^2 = .001,$ observed power = .06.

Testing the Benefits of the Full Course of Treatment

PCIT is conducted in two phases, the first focusing on relationship enhancement and the second on discipline. Anecdotally, therapists in our clinic note that many of children's behavior problems are significantly reduced after completing the first phase of treatment. However, we hypothesize that parents will report further reductions in children's behavior problems as they learn effective behavior management skills. The pattern of treatment gains in PCIT may vary by exposure to IPV. To the extent that children's challenging behavior is a result of disruptions in the parent-child relationship alone, children's behavior problems may be resolved after completing the first phase of treatment. The following analyses

TABLE 5. Mean Intensity and Numbers of Child Behavior Problems Measured by the ECBI Pre- and Posttreatment Scores by IPV Exposure and the Amount of PCIT the Client Received

Exposure to IPV	No IPV (<i>N</i> = 71)		IPV (<i>N</i> = 85)	
	Completed	CDI	CDI + PDI	CDI
ECBI: Intensity Scale				
Pretreatment	130.9 (43.1)	132.6 (36.0)	119.3 (48.5)	126.4 (42.3)
Posttreatment	115.1 (38.7)	84.1 (36.4)	106.5 (47.8)	88.7 (30.7)
ECBI: Problem Scale				
Pretreatment	14.0 (7.7)	15.6 (8.4)	15.6 (9.6)	15.3 (8.3)
Posttreatment	10.4 (8.8)	5.4 (6.8)	8.8 (8.5)	4.1 (6.0)

Note. CDI (First phase) vs. CDI + PDI (Complete course of treatment). CDI = child-directed interaction; PDI = parent-directed interaction; Intensity Scale effects: Treatment (Tx): $F(1, 147) = 16.73, p < .001, \eta^2 = .10, \text{power} = .98$; Tx \times PCIT amount $F(1, 147) = 16.73, p < .001, \eta^2 = .10, \text{power} = .98$; Tx \times IPV history: $F(1, 147) = 2.39, p = .12, \eta^2 = .02, \text{power} = .34$. Problem Scale effects: Treatment (Tx): $F(1, 147) = 30.2, p < .001, \eta^2 = .17, \text{power} = 1.0$; Tx \times PCIT amount $F(1, 147) = 9.22, p < .003, \eta^2 = .06, \text{power} = .86$; Tx \times IPV history: $F(1, 147) = 1.03, p = .31$.

compare the differences between the treatment gains of clients leaving after the first phase of treatment with those of clients completing treatment (see Table 5). We performed a $2 \times 2 \times 2$ repeated measures multivariate analysis of variance of ECBI Intensity and Problem Scale scores, with assessment point (pre- vs. posttreatment) as the within-subjects measure and IPV exposure and treatment completion (first phase of treatment only (i.e., CDI) vs. the entire course of treatment (CDI and PDI) as between-subjects measures. Results of this analysis showed a significant interaction between assessment point and amount of PCIT received, overall $F(2, 146) = 8.82, p < .001, \eta^2 = .11, \text{observed power} = .97$, and a significant main effect for assessment point, overall $F(2, 146) = 15.94, p < .001, \eta^2 = .18, \text{observed power} = 1.0$. An examination of the mean scores (see Table 5) suggest that parents perceived improvements in their children's behavior after the first phase of treatment, but that completing treatment predicts continued and significant improvements from mid- to posttreatment. Findings also showed a significant interaction between treatment completion and IPV exposure, overall $F(2, 146) = 3.52, p = .03, \eta^2 = .04, \text{observed power} = 0.65$. However, further examination of the univariate F -statistics for the two ECBI scales did not reveal any significant group differences from pre- to posttreatment.

DISCUSSION

The purpose of this study was to determine the effectiveness of PCIT for mother-child dyads exposed to IPV compared with a group of nonexposed dyads in a population of clinic-referred children. Overall, we found that participation in PCIT was effective in reducing children's behavior problems for both groups. The effectiveness of PCIT in the IPV-exposed group, a treatment targeting the quality of parenting and the parent-child

relationship, suggests that mental health problems of children exposed to IPV are connected to disruptions in the parent-child relationship. We acknowledge that disruptions in the parent-child relationship may have multiple sources: parents' emotional unavailability, children's anxiety and emotional insecurity, and parents' or children's posttraumatic stress. However, the degree to which children's symptoms can be reduced by improving the parent-child relationship testifies to the critical role of this relationship in promoting young children's mental health.

As a first step, we investigated attrition rates for the two groups of dyads to determine whether PCIT was equally effective in engaging IPV-exposed and non-IPV-exposed in treatment. We argued the importance of discussing attrition when considering the usefulness of a treatment for a particular population. We found that IPV-exposed mothers were no more likely to drop out of treatment than nonexposed mothers. We found that children who had been physically abused by their fathers, an experience more likely to be observed among IPV-exposed children, were more likely to complete treatment than other children. These findings suggest that neither exposure to IPV nor any of its associated risks were barriers to completing PCIT.

To determine whether PCIT was an effective treatment for IPV-exposed children, we compared measures of parent and child functioning pre- and posttreatment for the IPV-exposed group and the nonexposed group that completed a standard course of PCIT, controlling for mothers' marital status, children's prenatal exposure to alcohol or drugs, their neglect history, physical abuse history, and their fathers' physical abusiveness. We found strong treatment effects for measures of child functioning for both groups, suggesting that PCIT had beneficial effects for reducing the behavior problems of IPV-exposed children who completed treatment. We found statistically significant, but less powerful treatment effects on mothers' psychological symptoms.

The power of the effects of pre- to posttreatment differences in child behavior problems (ECBI scores) were similar in magnitude to those reported for pre- to posttreatment changes in a study of the efficacy of PCIT for parents of children diagnosed with oppositional defiant disorder (Hood & Eyberg, 2003). To illustrate, Hood and Eyberg reported pre-post differences on the ECBI Intensity Scale $d = 1.50$, power = 1.0; ECBI problem scores: $d = 1.51$, power = 1.0. In contrast, we reported an overall effect size for the two scales of $\eta^2 = .29$, which translates to $d = 1.30$ (observed power = 1.0). These comparisons suggest that the treatment effects we observed in our primarily child welfare, maltreatment-exposed population are nearly as strong as those in an efficacy study using a nonchild welfare population.

Last, we attempted to discover whether there was evidence of a "dosage" effect for PCIT (a) that dyads would make treatment gains if they participated only in the first phase of treatment and (b) that those who completed both phases would show significantly more treatment gains than those who dropped after the first phase of treatment. Results of analyses of ECBI scores showed significant decreases in children's behavior problems for those completing CDI only, but even greater decreases for those completing both CDI and PDI. These results suggest that there are significant gains for parents and children when they complete both phases of treatment.

While the strength of the changes (i.e., reductions in caregiver-reported child behavior problems, mother's self-reported stress, and mother's self-reported psychological symptoms) for IPV-exposed mother-child dyads from pre- to mid- and posttreatment are persuasive evidence of the effectiveness of PCIT, there may be alternative explanations for these reductions in child behavior problems and caregiver distress. The PCIT paradigm is

founded on the belief that coaching parents to alter their interaction styles and by teaching them skills in behavior management, that children's behavior will improve and parents will continue to perceive and reward the children's good behavior. However, it is possible that parents' reports of improvements in children's behavior are a reflection of a shift in their own attitudes towards their children, rather than a change in children's behavior. Therapists ask parents to focus on and praise their children's appropriate behavior. It is possible that by shifting parents' focus from negative to positive perspectives of their children, we cause a shift in attitudes about their children's behavior. Although not the primary focus of this treatment program, a positive shift in parental attributions may particularly benefit mothers who have been victims of intimate partner violence and are more likely to exhibit low self-esteem and depressive symptoms (Cascardi & O'Leary, 1992). Alternately, the change in parents' perceptions could result from their expectations for improvement as a result of being in therapy. Their beliefs in the benefits of therapy could drive perceptions of change in the same way that people might believe in the power of a placebo. The changes in mothers' perceptions of their children and their own functioning also could be an extension of their own desire to present themselves in a favorable light and to feel competent as parents.

Last, it is important to note the possible effects of the sample composition on the results of these analyses. The primary reason for these children's referral was their behavior problems. They were not referred to PCIT for treatment of trauma-related symptoms, although their history of interparental violence often was only one of several violent or traumatic experiences they suffered. Additionally, the violence often co-occurred with parental alcohol and drug use. These risk factors may signal the presence of strengths and challenges that differ from those experienced by women who come to the attention of researchers solely as a result of their experience in violent relationships. Furthermore, all of these mothers had been receiving Child Welfare services. In the same way that Green, Furrer, Worcel, Burrus, and Finigan (2007) found that participants of a Family Treatment Drug Court (FTDC) benefited over a similar group of parents who did not participate in FTDC, the involvement of Child Welfare and the Juvenile Court may influence the parents' perceived need for change and connect them with needed services more quickly. In sum, our population of mother-child dyads may be very different from those found in a shelter; and their involvement with Child Welfare services may influence their involvement in mental health treatment.

Limitations of This Study and Implications for Future Research

This study has some limitations. First, because we did not randomly assign mother-child dyads to treatment, we do not know whether children's behaviors would have improved in any treatment (or no treatment). However, as the IPV-exposed children in this study were treated in a nonlaboratory, outpatient setting by therapists who carried full-time clinical case-loads, and we used a population of children with behavior problems and nonexposed mothers as a control group, we believe that the results presented here provide a strong first step in establishing the effectiveness of PCIT in a population of IPV-exposed mother-child dyads.

Second, we did not have detailed information about the nature of the violence between parents. We had no information about the severity or duration of the violence, and had little information about the degree to which children were involved in the violence. Also, we had no information about the level of conflict in families that had no report of IPV. Future research would benefit from systematic measurement of the characteristics of IPV.

Third, we had no follow-up data to demonstrate the maintenance of treatment effects over time. Recent research has documented the maintenance of reductions in behavior problems after participation in PCIT for up to 6 years posttreatment (Hood & Eyberg, 2003). We depend upon future research to document the long-term effects of PCIT for families exposed to IPV.

Last, we focused primarily on mothers' reports of children's behavior and their own functioning as indicators of treatment effectiveness. We did not use multiple reporters or observational data to measure treatment effectiveness. Future studies should include multiple reporters or observational data when documenting the effectiveness or efficacy of PCIT for families exposed to IPV.

Conclusion

In conclusion, the results of this study show evidence for the effectiveness of PCIT as an intervention for IPV-exposed mothers and their children with disruptive behavior problems. Completing PCIT predicted improved mother and child functioning. We recognize that PCIT likely will not address all of the needs of families coping with interparental violence and additional services may be required. However, PCIT appears to be a promising treatment for this population.

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