

Outcomes of Parent-Child Interaction Therapy: A Comparison of Treatment Completers and Study Dropouts One to Three Years Later

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ABSTRACT. Using a quasi-experimental design, this study examined longitudinal outcomes for families previously enrolled in a study of Parent-Child

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Interaction Therapy (PCIT), a treatment program for young children with disruptive behavior disorders. Comparisons were made between 23 families who completed treatment and 23 families who dropped out of the study before completing treatment, using a structured diagnostic interview, and several parent-report measures. Length of follow-up for both groups ranged from 10 to 30 months after the initial assessment, with the average length of follow-up just under 20 months. Results indicated consistently better long-term outcomes for those who completed treatment than for study dropouts. These results highlight the need to identify salient predictors of treatment engagement and retention to maximize outcomes for young children. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <<http://www.HaworthPress.com>> © 2004 by The Haworth Press, Inc. All rights reserved.]

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The disruptive behavior disorders represent a major public health problem, estimated to be the most costly of all mental health problems in the United States (Kazdin, 1995). Children with conduct problems constitute the most frequent referrals for child mental health services (Kazdin, Mazurick, & Siegel, 1994) and experience a broad range of impairment that is generally more severe and chronic than that experienced by other clinic-referred children (Lambert, Wahler, Andrade, & Bickman, 2001). Studies indicate that disruptive behavior evident in early childhood persists across stages of development (Barkley, Fischer, Edelbrock, & Smallish, 1991; Campbell & Ewing, 1990; Moffitt, 1993; Patterson, 1993), and the presence of early disruptive behavior is a powerful predictor of subsequent delinquency and criminal behavior (Loeber, Green, Keenan, & Lahey, 1995) as well as a host of personal and social difficulties in adulthood (Loeber, 1991, Robins, 1981). Results of such longitudinal studies led Kazdin (1990) to propose that conduct disorder be conceptualized as a chronic illness with a relatively clear course and poor prognosis in the absence of treatment.

Parent training is regarded as the most promising approach for the treatment of early-onset conduct problems (Dumas, 1989; Eyberg, 1992; Kazdin, 1993), and parent-child treatments are well represented among the empirically supported treatments for young children with conduct

problems (Brestan & Eyberg, 1998). Parent-Child Interaction Therapy (PCIT) is an evidence-based treatment designed to change dysfunctional parent-child interactions through direct coaching of authoritative parenting skills during play and task situations in the clinic. The first stage of treatment emphasizes strengthening the parent-child attachment relationship; the second stage focuses on helping parents establish control over disruptive child behavior by using clearly communicated, age-appropriate instructions for behavior and consistent positive and negative consequences for compliance and noncompliance. Functional problem-solving skills training is incorporated throughout PCIT to prepare parents for new problems that arise after treatment is concluded (see Bell & Eyberg, 2002, for a complete description of the treatment program).

Although the immediate gains associated with parent training are well documented (see Brestan & Eyberg, 1998, for a review), information about long-term outcomes for families who either drop out or complete treatment programs is limited. Attrition during child treatments is high, ranging from 40% to 60% (Wierzbicki & Pekarik, 1993). The high rate of attrition presents significant barriers to effective service delivery for children and calls into question the results of research where the possibility of selection bias due to attrition may be high. Yet, the effects of attrition have received little study in the child treatment literature. There are no data to indicate whether children and families who seek treatment but then drop out of parent training programs fare worse in the long run than those who complete treatment. It is conceivable that children and families who drop out of parent training prematurely do so because of early improvements that are sufficient to sustain lasting gain. A better understanding of the processes associated with attrition may lead to more effective engagement and retention strategies for families in treatment (Prinz & Miller, 1994).

Even for treatment completers, longitudinal follow-up is limited. Existing follow-up studies in child psychotherapy rarely follow children for longer than 12 months (Kazdin, 1993), and the few studies that have examined follow-up for longer than one year after treatment (e.g., Baum & Forehand, 1981; Eyberg, Funderburk, Hembree-Kigin, McNeil, Querido, & Hood, 2001; Forehand & Long, 1988; Long, Forehand, Wierson, & Morgan, 1994; Patterson & Fleischman, 1979; Strain, Steele, Ellis, & Timm, 1982; Webster-Stratton, 1990) have yielded mixed results. In addition, many of the long-term follow-up studies have methodological weaknesses that limit the interpretation and generalizability of their findings (Eyberg, Edwards, Boggs, & Foote,

1998). Obtaining a suitable control group is one of the most difficult challenges of long-term follow-up. Yet, without a control group, it is not possible to conclude that positive changes from baseline are due to treatment rather than maturation, regression to the mean, contemporaneous events, or other uncontrolled factors.

In this study, we compared treatment completers to study dropouts to examine long-term outcome. This quasi-experimental strategy raises several methodological concerns. Foremost, the groups are self-selected and therefore may differ in ways other than group assignment. Any resulting pretreatment differences could provide an alternative explanation to the effects of treatment for long-term differences found between the groups. Previous studies examining differences between dropouts and completers have found quite different results. For example, Kazdin and colleagues (Kazdin, 1990; Kazdin, Mazurick, & Bass, 1993) have found several differentiating factors, including: (a) maternal age and antisocial history; (b) child reading score, self-reported delinquency, association with antisocial peers, and comorbidity; and (c) family socioeconomic disadvantage and minority status.

Other researchers have found no significant demographic or clinical differences between completers and dropouts (Gould, Shaffer, & Kaplan, 1985). In one study of over four hundred children in a general outpatient population, Weiss, Weisz, and Langmeyer (1987) evaluated demographic (e.g., age, SES, family structure) and clinical variables (e.g., behavior problems, depression) as well as parental perceptions of treatment and found no significant differences between the two groups. They concluded that the dropouts and completers were virtually indistinguishable and that “dropouts may constitute an acceptable, naturally-occurring control group for outcome research” (p. 918).

Our study focused on the experiences and outcomes of families who had been enrolled in a PCIT treatment study and subsequently either completed treatment or dropped out of the study. We examined 19 child and family variables to identify any significant pretreatment differences between the two groups. We also investigated families' reasons for dropping out of the study and efforts to obtain alternative services since that time. Finally, the outcomes of the two groups of families were compared. We hypothesized that children and families who completed treatment would, at the time of the follow-up assessment, report significantly better outcomes on measures of child behavior and parenting stress and would report more confidence in their ability to control their child's behavior and higher satisfaction with the treatment they had received than families who had dropped out of the treatment study. Conversely,

we hypothesized that the dropout families would report significantly poorer outcomes in these areas. Each group essentially served as the control group for the other.

METHOD

Participants

Participants in this follow-up study were drawn from 61 families who had been enrolled in a treatment study (Schuhmann, Foote, Eyberg, Boggs, & Algina, 1998) at least 10 months earlier. Children in the original treatment study had been referred to a large health center psychology clinic for treatment of disruptive behavior problems and met the Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised (DSM-III-R; American Psychiatric Association, 1987) criteria for Oppositional Defiant Disorder (ODD). Children who met criteria for the additional diagnoses of Conduct Disorder (CD) or Attention-Deficit Hyperactivity Disorder (ADHD) were not excluded from the study due to the high rates of comorbidity among the disruptive behavior disorders. Children on medication were not excluded but were required to have been stabilized on their medication (no change in medication or dosage for previous month) and not to change medication or dosage before treatment termination. Families of children not on medication were required not to initiate stimulant medication before treatment termination to remain in the study. Children excluded from study enrollment included those with a history of severe physical or mental handicap (e.g., blind, autistic). Children or parents who obtained a standard score below 70 on a cognitive screening measure were also excluded. The diagnoses of ODD, CD, and ADHD were determined by administration to the mother of the DSM-III-R Structured Interview for Disruptive Behavior Disorders (McNeil, Eyberg, Eisenstadt, Newcomb, & Funderburk, 1991). The cognitive screening measures used were the Peabody Picture Vocabulary Test-Revised (PPVT-R; Dunn & Dunn, 1981) with the children and the Wonderlic Personnel Test (Dodrill, 1981) with the parents (Schuhmann et al., 1998). All families meeting study requirements were invited to participate in the study. Families participating in the treatment study were reimbursed for their participation in the assessments and were not charged for treatment.

In the original treatment study, 33 families had been randomly assigned to an immediate treatment (IT) group, and 28 families had been

randomly assigned to a 4-month waitlist (WL) group. In the IT group, 8 children were on medication when they enrolled in the study, and in the WL group 6 children were on medication when they enrolled. Across both groups, approximately half ($n = 31$) of the 61 families dropped out of the study. In the WL group, 9 of 28 families dropped out while still on the waitlist, before starting treatment, and 8 dropped out after starting treatment. Of the 33 families in the IT group, only one family dropped out after assignment but before treatment started, but 13 of these families dropped out during treatment. The average length of treatment for the 30 treatment completers was 13.8 sessions ($SD = 3.2$), and the 21 dropouts who attended at least one session of treatment attended an average of 6.52 treatment sessions ($SD = 5.6$; range = 1 to 18 sessions).

For this follow-up study, 51 (84%) of the 61 families initially agreed to participate when contacted, but 5 families did not return questionnaires that were mailed, resulting in a final sample size of 46 (75%) children and families. Of the 15 children and families not participating in the follow-up study, 8 had completed treatment and 7 had dropped out of the original study. Of the 23 dropout families participating in this follow-up study, 8 had dropped out of the treatment study after assignment to group but before treatment started, and the remaining 15 had dropped out after a mean of 5.47 ($SD = 4.88$) treatment sessions. Demographic characteristics of the completer group ($n = 23$) and dropout group ($n = 23$) are shown in Table 1.

Most of the 46 children in this follow-up sample were boys (78%), and most were Caucasian (74%), with African American (15%), Hispanic (4%), and bi-racial children (4%) also represented. The children's mean age at the time they enrolled in the treatment study was 4 years, 11 months ($SD = 11.68$ months). At the time of this follow-up, the mean age was 6 years, 7 months ($SD = 13.5$ months; range 49 to 107 months). The children had a mean standard score of 89.9 ($SD = 16.94$) on the cognitive screening measure when they entered the study. In addition to meeting diagnostic criteria for ODD at study entry, over half (59%) of the children had met criteria for ADHD, CD, or both. The families had originally been assigned to the IT or WL groups in nearly equal numbers (i.e., 24 and 22, respectively). On average, families participated in this follow-up study 19.59 months ($SD = 7.09$) after their immediate pretreatment assessment (range 10 to 30 months).

Measures

The *DSM-III-R Structured Interview for Disruptive Behavior Disorders* (McNeil et al., 1991) was administered to the child's mother by tele-

TABLE 1. Pretreatment Characteristics of Treatment Completers versus Study Dropouts

Categorical Variables	Completers (<i>n</i> = 23)		Dropouts (<i>n</i> = 23)		χ^2
Child gender (% male)	87%		70%		1.41
Race (% minority)	26%		26%		0.77
Family structure (% single parent)	30%		57%		1.26
Comorbid CD	13%		30%		1.41
Comorbid ADHD	65%		78%		0.97
Stimulant medication (% using)	17%		29%		1.32
Initial assignment to WL group	35%		61%		1.75
Continuous Variables	Completers <i>M</i> <i>SD</i>		Dropouts <i>M</i> <i>SD</i>		<i>t</i> or <i>F</i>
Child age	4.57	0.8	4.30	0.8	0.32
Number ODD symptoms	5.74	1.1	6.29	1.2	0.98
Number ADHD symptoms	8.87	2.8	9.90	3.2	0.26
Number CD symptoms	1.13	1.1	1.76	1.7	0.71
PPVT-R score	91.04	15.7	88.74	18.3	0.46
Maternal age	31.34	6.8	29.43	5.6	1.04
Socioeconomic status	32.15	9.9	37.18	16.0	-1.23
Time since intake (months)	20.56	6.9	18.61	7.2	0.94
Treatment sessions attended	13.74	3.3	3.57	4.7	8.49***

Note. ODD = Oppositional Defiant Disorder; ADHD = Attention Deficit Hyperactivity Disorder; CD = Conduct Disorder; PPVT-R = Peabody Picture Vocabulary Test-Revised; Socioeconomic status = Hollingshead (1975) Four-Factor Index of Social Status.

* $p < .05$. ** $p < .01$. *** $p < .001$.

phone. In this interview, mothers are asked to describe their child's behavior in terms of the symptoms that comprise the Disruptive Behavior Disorders. Diagnoses are made according to whether the child demonstrates the minimum number of symptoms specified in the DSM-III-R for the disorder and whether the symptoms have been present for at least six months. High levels of interrater agreement ($\geq 99\%$) for the presence of specific symptoms and duration of symptoms have been reported for the present sample and others (Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993; Schuhmann et al., 1998).

The *Eyberg Child Behavior Inventory* (ECBI; Eyberg & Pincus, 1999) is a 36-item parent rating scale of disruptive behavior with two scales. The Intensity Scale measures the frequency of disruptive behavior on a scale from 1 (*never*) to 7 (*always*). The Problem Scale asks whether each behavior is a problem for the parent on a *yes-no* scale, measuring the parent's tolerance for the child's behavior. The scales have shown internal consistency coefficients (Cronbach's alpha) ≥ 0.97 for the Intensity Scale, and ≥ 0.95 for the Problem Scale in gender, race, grade, and classroom placement subgroups of the standardization sample (Eyberg & Pincus, 1999). Stability coefficients of .80 and .85, respectively, across a 12-week interval and .75 for both scales across a 10-month interval have been found (Funderburk, Eyberg, Rich, & Behar, 2003). Revised cutoff scores of 132 on the Intensity Scale and 15 on the Problems Scale (both at $T = 60$) have been established (Eyberg & Pincus, 1999), and subsequent studies have documented the sensitivity and specificity of the intensity scale cutoff score in distinguishing children with and without disruptive behavior disorders (Rich & Eyberg, 2001). Several studies have also demonstrated the sensitivity of the ECBI scales to changes during treatment (Taylor, Schmidt, Pepler, & Hodgins, 1998; Webster-Stratton & Hammond, 1997).

The *Parenting Stress Index* (PSI; Abidin, 1995) is a 101-item inventory that was designed to identify parent-child dyads that are under stress and are experiencing (or are at risk for developing) dysfunctional parenting and child behavior problems. The instrument consists of 13 subscales that are grouped into a Parent Domain, which measures personal problems that lead to stress in their parenting role, a Child Domain, which measures the child's behavior problems that lead to frustration for the parent in trying to develop a relationship with the child, and a Total Stress Scale, which is a sum of the Child and Parent Domain scores. Abidin (1995) reported Cronbach's alphas of .90 and .93, and 3-month test-retest stability coefficients of .91 and .63, for the Parent and Child Domains, respectively, as well as many studies docu-

menting the sensitivity of the PSI to reductions in stress level following parent training. The cutoff score for the PSI Parent Domain is 151 and for the Child Domain is 122.

The *Parental Locus of Control Scale* (PLOC; Campis, Lyman, & Prentice-Dunn, 1986) measures locus of control as it relates to the parenting role and parent-child interactions. It includes 47 items rated on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Lower total scores are associated with greater internal locus of control. A Cronbach's alpha of .81, 2-week retest stability of .83, and sensitivity of the scale to parent training have been reported (Roberts, Joe, & Rowe-Hallbert, 1992). Campis et al. (1986) also reported that parents seeking treatment for their children's behavior problems endorsed a more external locus of control than nonreferred parents. Cutoff scores for the PLOC have not been established.

The *Therapy Attitude Inventory* (TAI; Eyberg, 1993) was designed to assess parent satisfaction with outpatient participation in parent training, family therapy, or parent-child therapy. A Cronbach's alpha of .90 and 4-month test-retest stability of .85 have been found (Brestan, Jacobs, Rayfield, & Eyberg, 1999), and several studies have documented the discriminative validity of the TAI (Brestan et al., 1999; Eisenstadt et al., 1993; Eyberg & Matarazzo, 1980). Scores have also been shown to correlate with pre- to post-treatment change scores on rating scales and observational measures of child behavior problems (Brestan et al., 1999).

Procedure

Each of the 61 families was mailed a research packet containing the following: a cover letter describing the study; a demographic questionnaire; the ECBI; the PLOC; the PSI (answer form only); an informed consent form; a self-addressed, stamped envelope; and a \$1 bill to encourage participation. The measures that were selected for use at follow-up were chosen because they (a) showed strong psychometric properties including convergence with observed behavior during mother-child interactions; and (b) had been used in the original treatment outcome study. In addition to the standard measures, parents in the dropout group were asked about their reasons for dropping out and any additional treatment they had obtained since dropping out of the PCIT study. Families who had participated in at least one PCIT treatment session were also sent the TAI to assess consumer satisfaction. In the cover

letter, the study was described, and families were informed that they would be paid \$20 for mailing back the completed measures.

One week after mailing the packets, research assistants began calling the families to ask about their decision to participate in the follow-up study. In the dropout group, the telephone number in the family's treatment file was no longer correct for 15 (48%) of the 31 families. A follow-up locator sheet, completed by families at their original assessment, was used to contact close friends or relatives identified by these families as able to provide future contact information for them. Within the dropout group, a mean of 7.2 calls (range 2 to 20) was required to locate, obtain telephone interview data, and prompt return of the completed packets. Within the completer group, a mean of 1.8 calls (range 1 to 7) was required to locate and obtain telephone interview data from the families. Calls to prompt the return of the completed packets were not necessary because families in the completer group returned their packets within two weeks after the completed telephone interview.

During the telephone interviews, the primary caregiver (in all cases, the mother) was given instructions for completing the questionnaires, and the DSM-III-R Structured Interview and PSI were administered. For the PSI, parents filled in their answers on the response form while the caller read the items aloud. In previous studies, the telephone interview method has been found to be a reliable method of data collection and comparable to face-to-face interviews (Bauman, 1993; McCormick, Workman-Daniels, Brooks-Gunn, & Peckham, 1993; Soares & Ray, 1986). Each call lasted approximately 25 minutes.

RESULTS

Early Differences Between Treatment Completers and Dropouts

Analyses of pretreatment variables indicated that the two groups did not differ on any child or family demographic variables examined, including child age, sex, race, and receptive language ability; maternal age; family structure; and socioeconomic status. The two groups also did not differ on disruptive behavior disorder symptoms or the presence of comorbid ADHD or CD at pretreatment (see Table 1). Among the five treatment outcome measures, only the PSI child domain score differed between groups at the pretreatment assessment, $t(43) = 2.145$, $p = .04$ (see Table 2).

TABLE 2. Long-Term Outcomes for Treatment Completers and Study Dropouts

Measure	Group	Pretreatment		Follow-up		d^a	df	F^b
		M	SD	M	SD			
ECBI-I	TC	171.04	28.4	133.13	30.4	1.29		
	DO	179.83	26.6	170.61	33.0	0.31	(1, 44)	9.24**
ECBI-P	TC	22.43	7.0	10.36	7.1	1.69		
	DO	25.40	6.3	21.57	8.5	0.52	(1, 43)	16.06***
PSI Child	TC	140.52	16.3	120.30	23.7	1.01		
	DO	152.82	21.9	155.65	24.4	0.12	(1, 43)	17.83***
PSI Parent	TC	142.09	23.4	128.83	22.0	0.58		
	DO	153.00	20.9	149.70	24.1	0.15	(1, 43)	5.61*
PLOC	TC	137.96	11.4	120.91	15.0	1.29		
	DO	135.55	10.4	130.68	14.3	0.39	(1, 40)	1.11

Note. ECBI-I = Eyberg Child Behavior Inventory Intensity Scale; ECBI-P = ECBI Problem Scale; PSI Child = Parenting Stress Index Child Domain; PSI Parent = PSI Parent Domain; PLOC = Parental Locus of Control Scale; TC = Treatment Completer; DO = Dropout.

^a Effect size for pretreatment to follow-up change in each group.

^b F value for Group by Time interaction.

* $p < .05$. ** $p < .01$. *** $p < .001$.

To identify other factors that may have contributed to attrition, the larger sample of 31 families who had dropped out of the original study (including those who declined participation in the follow-up study) had been asked during the follow-up telephone contact about their reasons for dropping out and about any additional services they had received since that time. The primary reasons parents reported for dropping out were logistical problems such as being unable to obtain transportation or child-care for siblings ($n = 11$, or 35%); feeling that treatment was not progressing quickly enough or feeling unable to wait for treatment to begin ($n = 6$, or 19%); and dislike of the treatment approach or techniques ($n = 5$, or 16%).

Among these 31 dropout families, most (71%) reported at least one intervention or service subsequently obtained that was specifically intended to help the parents manage their child's behavior. Interventions included psychotropic medication ($n = 13$, or 43%); school-based services, either counseling or special classroom placement ($n = 8$, or 26%); individual play therapy ($n = 4$, or 13%); parenting workshop ($n = 1$, or 3%); and inpatient hospitalization ($n = 1$, or 3%). Three families (10%) who had not sought other services stated that they continued to use PCIT techniques that they learned before dropping out, and 7 (23%) of the dropout families asked if they could return to complete treatment (these families were referred for treatment outside the research study). Among the 30 families that completed treatment, 10 (33%) of the children were taking stimulant medication for ADHD at the time of this follow-up. Differences between the dropouts and completers in the percent of children on medication at follow-up was not significant, $\chi^2(1) = 0.48$, *ns*. No other data on service utilization after treatment were obtained for the treatment completers.

Longitudinal Outcomes for Treatment Completers and Study Dropouts

Differences in long-term outcomes between families in the dropout and completer groups were analyzed using 2 (group) \times 2 (time) repeated measures analyses of variance (ANOVAs) for each of the primary outcome measures. Significant group by time interactions were found for all measures except the PLOC (see Table 2). Follow-up *t* tests showed significant improvements for the treatment completer group on mothers' ratings of their child's disruptive behavior frequency (ECBI Intensity Scale, $t(22) = 6.64$, $p < .001$), their tolerance for their child's misbehavior (ECBI Problem Scale, $t(21) = 6.44$, $p < .001$), and their parenting stress levels (PSI Parent Domain, $t(22) = 2.87$, $p = .009$; PSI Child Domain, $t(22) = 3.9$, $p = .001$). None of the changes between pretreatment and follow-up for the study dropouts was significant.

Effect sizes for the five primary outcome measures were also calculated as another way to illustrate the magnitude of change from pretreatment to follow-up for the dropout and completer groups. As shown in Table 2, large effect sizes were found for the completer group on the ECBI scales, the PSI domain scores, and the PLOC. In contrast, small to medium effect sizes were obtained for the dropout families on each of these measures.

Differences between the two groups were also examined for changes in the number of disruptive behavior symptoms reported during the DSM-III-R Structured Interview. Results of repeated measures ANOVAs showed significant group by time interactions for each of the three diagnostic categories. The decrease in ODD symptoms was significantly greater for children in the treatment completer group (Follow-up $M = 2.91$, $SD = 2.70$) than the dropout group (Follow-up $M = 5.30$, $SD = 1.90$), $F(1, 42) = 8.94$, $p < .01$. The number of ADHD symptoms at follow-up also showed a significantly greater decrease in the treatment completer group (Follow-up $M = 6.52$, $SD = 4.10$) than the dropout group (Follow-up $M = 9.91$, $SD = 3.60$), $F(1, 42) = 5.43$, $p < .05$. Finally, the decrease in CD symptoms was significantly greater for children in the treatment completer group (Follow-up $M = .70$, $SD = 1.06$) than the dropout group (Follow-up $M = 1.74$, $SD = 1.71$), $F(1, 42) = 5.43$, $p < .05$. Table 3 shows the number of children in each group meeting diagnostic criteria for ODD, ADHD, and CD at pre- and post-treatment. Overall, 18 (78%) of the 23 children whose families dropped out of treatment continued to meet diagnostic criteria for one or more of the disruptive behavior disorders compared to 8 (34%) of 23 children in the treatment completer group.

Because the TAI is not administered at pretreatment, the between-groups comparison for this measure was an independent samples t test of the follow-up means. For dropout families, the TAI was administered at follow-up only to those who participated in at least one session of PCIT. Results showed that parents who had completed treatment reported higher overall satisfaction with treatment at the time of the follow-up ($M = 40.52$, $SD = 6.42$) than parents who had dropped out of the treatment study ($M = 34.90$, $SD = 4.43$), $t(31) = 2.51$, $p < .05$.

Clinical Significance of the Long-Term Outcomes

Clinically significant change on outcome measures with established cutoff scores was determined using the twofold criteria suggested by Jacobson, Roberts, Berns, and McGlinchey (1999): (a) the magnitude of change had to be statistically reliable, and (b) at the follow-up assessment, families had to be in a range that rendered them indistinguishable from well-functioning individuals. To determine whether the magnitude of change was reliable, a reliable change index (RCI; Jacobson, Follette, & Revenstorf, 1984) was used to ensure that the degree of change exceeded the margin of measurement error. The formula for calculating the RCI involved dividing the magnitude of change between

TABLE 3. Number of Children Meeting Criteria for DSM-III-R Diagnoses of the Disruptive Behavior Disorders Among Treatment Completers ($n = 23$) and Dropouts ($n = 23$)

Diagnosis	Group	Pretreatment		Follow-up	
		Yes	No	Yes	No
ODD	TC	21	2 ^a	5	18
	DO	23	0	13	10
ADHD	TC	15	8	8	15
	DO	18	5	16	7
CD	TC	3	20	2	21
	DO	7	16	8	15

Note. Mean follow-up length = 19.59 months (range 10 to 30 months) after initial assessment. ODD = Oppositional Defiant Disorder; ADHD = Attention Deficit Hyperactivity Disorder; CD = Conduct Disorder; TC = Treatment completers; DO = Dropouts.

^aThese two children had received a diagnosis of ODD at initial assessment, but were assigned to the waitlist group and did not meet diagnostic criteria for ODD at the time of their pretreatment assessment 4 months later.

pretreatment and follow-up scores by the standard error of the difference score. RCIs greater than 1.96 were considered to be sufficient in magnitude (Jacobson et al., 1999). For the second criterion, the published cutoff value for each measure was used.

On the ECBI Intensity Scale, clinically significant gains at follow-up were found for 3 (13%) of the children in the dropout group and 12 (52%) of the children in the treatment completer group. On the ECBI Problem Scale, clinically significant gains were found for 4 (17%) of the mothers in the dropout group and 14 (61%) of the mothers in the completer group. A similar pattern was seen on the PSI Child Domain, where only 1 (4%) of the families in the dropout group showed clinically significant improvements at follow-up compared to 10 (44%) of the families in the treatment completer group. On the PSI Parent Domain, 9 (39%) of the families in the dropout group and 11 (48%) of the families in the completer group showed clinically significant gains since pre-treatment.

DISCUSSION

One key finding from this study is that parents who completed treatment showed significant positive changes 10 to 30 months following

treatment intake in ratings of their child's disruptive behavior and their own parenting stress. The second key finding is that families of children with disruptive behavior who sought treatment but dropped out of the treatment study showed little change. The outcomes for the treatment completers were significantly better than those of the study dropouts. Few studies have examined the longitudinal outcomes for either study dropouts or completers of treatments for disruptive young children, and this study is the first to demonstrate significant differences in long-term outcomes between families who complete versus drop out of the same treatment program.

Looking first at the pretreatment differences between the dropouts and completers, the results were notable for the absence of differences. No differences were found on any of the child, parent, or family demographic variables. Among the clinical variables, only the PSI Child Domain differed between groups at the pretreatment assessment, with mothers in the dropout group showing higher parenting stress related to their relationship with their child. Other than on this measure, no demographic or clinical characteristics were found at the initial assessment that distinguished the families who later completed treatment or dropped out. Thus, the use of each group as the control for the other in this follow-up study was considered adequate and represented an improvement over previous follow-up studies of PCIT.

The young children in this study had been clinic-referred for treatment because of disruptive behavior problems, had met diagnostic criteria for ODD at intake, and many of the children had comorbid disruptive behavior diagnoses as well. As a group, they scored over 2 standard deviations above the normative mean on parent ratings of disruptive behavior. At follow-up, the mothers who completed treatment reported significantly fewer symptoms of ODD than did mothers of dropouts. Over twice as many children who dropped out of the study met diagnostic criteria for ODD at the follow-up assessment than children who completed treatment. The number of children meeting diagnostic criteria for ADHD was also decreased almost by half among treatment completers. This finding was surprising because the goal of PCIT is to change the parent-child interactions that influence children's oppositional, defiant behavior and not those behaviors often attributed to the neurological signs of ADHD. It may be that the behavioral manifestations of borderline ADHD are exaggerated in young children with ODD to such an extent that these children are misdiagnosed by parent report alone. When the ODD behaviors are effectively treated, the behavioral manifestations of borderline or mild ADHD may not be salient to parents.

The absence of teacher report measures of ADHD is a significant limitation and indicates caution in drawing any conclusion about the long-term effects of PCIT on ADHD symptomatology.

In addition to differences in the children's oppositional and defiant behaviors, the mothers in the treatment completer group reported significantly lower parenting stress at follow-up than mothers in the dropout group. Parenting stress, which had decreased during treatment to within normal limits in both the child domain (stress related to characteristics of child) and the parent domain (stress related to qualities of the parent) for the treatment completers (Schuhmann et al., 1998), remained significantly below the level of the dropouts during the 10- to 30-month follow-up period. In the dropout group, no measurement of stress was obtained between the pretreatment and follow-up assessments, but the high parenting stress scores at both assessments suggest that the initially high level of parenting stress was relatively unchanged throughout the follow-up period.

The mothers who completed treatment also reported a more internal locus of control regarding their children's behavior than they had at pretreatment, although mothers in the dropout group also reported a more internal locus of control at follow-up than pretreatment, which suggests that time alone may enhance parents' sense of control over the behavior of their child. That is, parents may feel they have more influence over the behaviors of school-age children than preschoolers generally. The effect size data for changes in parental locus of control over the follow-up period suggested that the effect is stronger for treatment completers, and it is possible that in a larger sample, differences between groups would attain statistical significance. It is also possible that the PLOC, a relatively less well-developed instrument than the other measures of outcome used in this study, was not sufficiently stable for use in measuring long-term change.

Not surprisingly, the mothers who had completed treatment were more satisfied with the treatment they had received than the mothers who had dropped out of the study. Although treatment satisfaction is a highly subjective index of outcome, it is significantly related to more objective measures of child behavior change (Brestan et al., 1999). Furthermore, the attitudes that parents hold toward a treatment program are likely to influence the extent to which they continue to use the principles and skills learned in treatment, which in turn should influence treatment maintenance. Attitudes toward treatment may also influence the extent to which parents seek help in the future if their child's behavior begins to relapse. Results from this study suggest that the treatment completers

remained satisfied with the process and outcome of PCIT, whereas the treatment dropouts held generally neutral opinions, expressing neither strong satisfaction nor dissatisfaction with their earlier treatment.

One limitation of this study is the use of a quasi-experimental design in which the groups were self-selected rather than randomly assigned. Although few pretreatment differences were detected, unknown, and thus uncontrolled, differences may have affected the findings. This design resulted in some pretreatment group differences that could be controlled statistically only to a limited extent. Well-controlled studies for clinical follow-up investigations are difficult to design due to the desire to treat children as effectively as possible once a significant disorder is identified. One alternative to a randomized, controlled trial is to compare children to normal controls at pre- and post-treatment points, to demonstrate clinically significant change. This is a good alternative when the course of the disorder, untreated, has been found in epidemiological studies to persist or worsen with time and when the outcome measures have demonstrated long-term stability. This alternative does not control for specific cohort effects, however. The use of dropouts as a control group for treatment completers can control cohort effects to some extent, and in view of the options available, the comparison of completers to dropouts may be the best alternative for examining treatment follow-up of chronic, progressive disorders such as ODD. From this perspective, dropouts may be considered a naturally occurring comparison group of families who seek “usual services” (Gould et al., 1985; McAdoo & Roeske, 1973; Weisz et al., 1987).

A second methodological limitation is our reliance on maternal report via rating scale measures and telephone interview. The measures do not provide cross-informant confirmation of the mothers' responses, leaving the onus on the psychometric strength of the measures we used to obtain the mothers' reports. These instruments had evidence of good internal consistency, discriminative validity, and at least short-term stability over time, which may increase confidence in the findings. Further, the research assistants who collected the data were unknown to the families in the study. This lack of familiarity, combined with the length of time since the families had been in contact with the project, may have lessened the demand characteristics associated with treatment evaluation. Still, the study is dependent on the mothers' report alone. Only one study to date has reported evidence of long-term maintenance of change in observed behaviors following PCIT (Eyberg et al., 2001), and controlled studies examining long-term behavioral change are an important direction for future research.

The results of this study add to our knowledge of the long-term effects of parent training programs for young children with disruptive behavior by providing evidence of divergent trajectories for families who seek treatment and subsequently either drop out or complete the program. Without complete treatment, parents see little change in the very severe behavior problems they describe when initially seeking treatment. Conversely, most families who complete treatment appear to fare well in the long run, with over half of the mothers describing their children's behavior as within the normal range.

A major challenge for future treatment research is to decrease attrition. Families who drop out of treatment programs are families with enough motivation to seek treatment initially and, therefore, represent a group of high-risk families who have a better chance of being helped than similar families who do not make that first step. One implication from this study for the treatment of young children with disruptive behavior is the importance of dealing with the economic barriers to treatment faced by many families. The primary reasons parents reported for dropping out were difficulty obtaining childcare for other children in the family during treatment sessions and difficulty obtaining transportation to the clinic, both of which are related to the limited financial resources of the families. Although the families' socioeconomic level did not distinguish dropouts from completers in this study, financial constraints placed burdens on most of the families. What enabled some families to overcome these constraints and succeed in treatment is not clear. The variables that actually distinguish dropouts from completers in PCIT are still largely unknown. The results of this study highlight the critical need to identify the salient predictors of dropout and retention to maximize outcomes for young children with disruptive behavior and prevent the multitude of problems experienced by the families of disruptive children without treatment.

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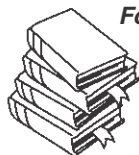
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