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Empirical Support for a Treatment Program for Families of Young Children With Externalizing Problems

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We evaluated the efficacy of a manualized multimodal treatment program for young externalizing children. Families were assigned randomly to an immediate 12-week parent and child treatment condition (n = 24) or to a delayed-treatment condition (n = 23). Parents had high attendance, high satisfaction with treatment, and increased knowledge of behavior management principles. Relative to the waitlist condition, treatment parents reported statistically and clinically significant reductions in child behavior problems, improved parenting practices (i.e., increased consistency, decreased power assertive techniques), an increased sense of efficacy, and reduced parenting stress. There was a trend toward parents improving their attitudes toward their children. In considering the process of change, we found evidence that improved parenting practices mediated reductions in child behavior problems and that child improvements mediated changes in parent attitudes and stress. Five months following treatment, teachers reported significant improvements in child behaviors, whereas parents reported that reductions in child behavior problems and parenting stress were maintained.

Disruptive behaviors (e.g. aggression, noncompliance) are the most prevalent of children's psychological problems—or at least the most noticed. Up to 75% of all child referrals relate to disruptive behaviors. Furthermore, such externalizing behavior problems tend to persist over time (Denham et al., 2000; Heller, Baker, Henker, & Hinshaw, 1996), particularly when they have an early and severe onset (Campbell, March, Pierce, Ewing, & Szumowski, 1991). These behavior problems significantly interfere with children's ability to develop successful peer relationships. Hinshaw and Melnick (1995) reported that aggression and noncompliance were the primary explanations that children advanced for rejecting peers. By the middle grades, aggressive children's negative reputations are established (Coie, 1990), and negative peer status is a powerful predictor of poor adjustment (Parker & Asher, 1987). There are strong rationales, then, for early interventions that target disruptive behavior problems and peer relationships.

We report here on the efficacy of Project TEAM, a multimodal manually guided group treatment program for parents and their young children with disruptive be-

havior problems. In a review of interventions for young aggressive-disruptive children (preschool to age 8), Bryant, Vizzard, Willoughby, and Kupersmidt (1999) found only 17 studies, many of which had methodological limitations. Only 7 studies used a treatment-control design with random assignment, very few reported having a specific intervention manual, 5 studies had no follow-up results, and the majority utilized a White, middle-class sample. In designing Project TEAM, we sought to overcome these limitations.

The primary component of the TEAM program is group parent training. Parents' lack of involvement with their children, their poor supervision and monitoring of activities, and their use of harsh or inconsistent discipline show some of the more consistent associations with conduct problems in children (Stormshak, Bierman, McMahon, & Lengua, 2000). Beyond these, parent-child negative interaction styles are higher in families of young children with behavior problems (Buss, 1981; Feinfield, 1995; Webster-Stratton, 1985) and are predictive of more persistence in disruptive behavior problems (Pettit, Bates, & Dodge, 1993). Patterson's (1982) coercion model explains how, over time, these interactions that lack warmth and negotiation features exacerbate problem behaviors such as aggression.

Parent training is considered the most effective intervention strategy for children's acting-out problems (Kazdin, 1985). Parent training interventions have produced positive changes when administered individually, such as the Triple P-Positive Parenting Program and Parent-Child Interaction Therapy (Bor, Sanders,

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& Markie-Dadds, 2002; Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993) or in a group format (Webster-Stratton, 1996). Four of the most successful parent training programs for externalizing children's parents (Barkley, 1997; Forehand & McMahon, 1981; Patterson, Reid, Jones, & Conger, 1975; Webster-Stratton, 1996) have several empirically validated components in common. Based on an operant model, all of the programs teach reinforcement in the form of praise, concrete rewards (e.g., a token economy system), or both. All provide detailed information on effective implementation of time-out procedures, but only after spending earlier sessions on monitoring and rewarding positive behaviors. In addition to this focus on consequences, all of the programs emphasize the importance of antecedents (e.g., how to successfully prepare a child for what to expect; how to give effective commands). Barkley and Patterson provided sessions on how to generalize in-session information to a number of contexts. Overall, parent training has demonstrated efficacy in reducing child behavior problems, but more generalized changes (e.g., in parenting stress, parents' sense of competence, relationship between parent and child) are less well documented.

In designing a parent treatment program, it seemed important to target both parenting skill and performance deficits. Even if the groups target potential skill deficits by providing information on child management skills, parents may have performance deficits that interfere with their ability to implement these skills. Parents of disruptive children often have fewer resources to draw on for behavior management; they experience more stress, marital conflict, and extra-familial conflict or insularity than mothers of control children (Forehand & Long, 1988; Patterson, Reid, & Dishion, 1992; Webster-Stratton & Hammond, 1997). Elevated levels of chronic parental stress are associated with both the onset and the maintenance of externalizing behavior problems (Campbell, 1997; Heller et al., 1996). Baker, Landen, and Kashima (1991) found that parents who had reported high stress and low family and marital satisfaction prior to treatment followed through less 1 year later. Child improvements have been enhanced in parent training programs that added components to address areas of potential distress (Dadds, Schwartz, & Sanders, 1987; Griest & Forehand, 1982).

A secondary component of Project TEAM is adjunctive child intervention groups that run simultaneously with the parent groups. Webster-Stratton and Hammond (1997) proposed that by combining parent and child groups one is able to address a broader range of risk factors (e.g., parents' harsh discipline and coercive parenting style and children's deficits in social skills, affect regulation, and problem solving). Their combined group had the most improvements in parent-child interactions, as well as child problem solving

and conflict management; these changes, in addition to improved child behavior problems, were maintained at 1-year follow-up.

A third component of Project TEAM is a combined parent-child "together time" in which families engage in collaborative tasks, practice new skills, and participate in relationship-building exercises. Based on a review of current research, Cavell (2001) recommended expanding parent training by including a focus on fostering more positive dyadic exchanges, rather than a narrow focus on restrictive limit-setting. The FAST Track program included a similar component, and following intervention parents reported greater parenting satisfaction, warmth, and positive involvement, and children's peer interactions and social status improved (Conduct Problems Prevention Research Group, 1999). Despite the abundance of research illustrating the connection between parent-child relationships and children's social competence (Guralnick & Neville, 1997), very few parent-group programs have incorporated a relationship component into their protocols (McNeil, Capage, Bahl, & Blanc, 1999).

We designed our intervention program to address several methodological shortcomings noted in the limited treatment research with young aggressive-disruptive children (Bryant et al., 1999). We included a sample that was diverse in race, ethnicity, and socioeconomic status; assigned families at random to immediate- or delayed-treatment conditions; and obtained follow-up measures. The intervention followed a detailed treatment manual.

The evaluation was derived from three primary hypotheses. First, we hypothesized that treatment condition children would show significant behavioral improvement relative to waitlist children and that their gains would be clinically significant. Second, we hypothesized that treatment condition parents would show significant positive changes in parenting practices relative to waitlist parents. Third, we hypothesized that treatment condition parents would show improved attitudes toward their children, increased parenting sense of competence, and reduced parenting stress. We also had two secondary hypotheses about the processes by which changes in child behavior and parental attitudes and stress would occur: (a) that treatment-produced changes in parenting practices would mediate child behavior changes and (b) that child behavior change would mediate changes in parental attitudes and stress.

Method

Participants

Families of children with externalizing behavior problems were recruited through fliers sent to elemen-

tary schools, day care centers, and community centers in Los Angeles. Inclusion criteria were (a) the child had to be 4 to 8 years of age, (b) the child could not be developmentally delayed, (c) the primary referral problem had to be persistent and significant disruptive behavior problems (e.g., aggression, noncompliance, oppositional behaviors), and (d) the child had to have significant disruptive behavior problems according to the primary caregiver's Child Behavior Checklist (CBCL; Achenbach, 1991) externalizing domain (T score of 60 or greater) or the Eyberg Child Behavior Inventory (ECBI; problem domain score of 12 or greater). Eighty-three percent of target children also had an externalizing T score of 60 or greater on the Teacher Report Form (TRF). Families were assigned to an immediate treatment or waitlist control condition (see the following discussion).

Of 56 families who enrolled, 4 did not complete the treatment condition and 5 waitlist families did not complete the postwaitlist assessment. Table 1 shows the demographics of the 47 families who completed the treatment ($n = 24$) and waitlist ($n = 23$) conditions. The children were primarily boys (85%), ranging in age from 4.3 years to 8.3 years, with a mean age of 6.6 years ($SD = 1.2$). Twenty-one (44.7%) of the children were White and 26 (55.3%) were minorities or of mixed ethnicity (8 African American, 4 Hispanic, 1

Asian, 13 mixed). The mean pretreatment CBCL externalizing score was 66.5 ($SD = 9.1$), indicating that the children as a group were in the clinical range (the borderline range is 60 to 63, and the clinical range is 64 and above). Thirty-four of the children (72%) were above the clinical cutoff on the CBCL. Ten (21%) of the children were on medication for behavior problems. Although this was a community sample, recruited mainly through schools, almost two thirds of the families (64%) had received therapeutic services within the past 4 months.

The mean age of the primary caregivers was 38.4 years ($SD = 8.0$). Twenty-three (49%) of the parents were married or living with significant others. In 41 families (88.2%), the mother was the primary caregiver; the remaining 11.8% was comprised of grandmothers, aunts, and fathers. Forty-three percent of the primary caregivers were college graduates, and 56% had an annual income of at least \$31,000. On the demographic variables in Table 1, the only significant difference between the treatment and the waitlist conditions was the primary caregiver's age; however, this did not correlate significantly with any of the significant condition change variables discussed in the results. On dependent variables, the only significant differences between conditions were on several teacher-completed measures; t tests revealed that the waitlist condition had significantly higher TRF aggression scores, higher School Situations Questionnaire (SSQ; Barkley, 1981) severity scores, and lower Walker-McConnell total scores than the treatment condition at the initial assessment.

Table 1. Demographics of Treatment Sample and Waitlist Sample

Demographic Variable	Treatment ($n = 24$)	Waitlist ($n = 23$)	t or χ^2
Child			
Sex (% girls)	21	8.7	$\chi^2 = 0.58$
Age (years)	6.6 (1.1)	6.6 (1.2)	$t = 0.14$
Ethnicity (% White)	58	30	$\chi^2 = 2.66$
Siblings (mean)	1.1 (1.1)	1.2 (.83)	$t = -0.18$
Medication (% yes)	25	18	$\chi^2 = 0.08$
Prior treatment ^a	67	61	$\chi^2 = .01$
PPVT (standard score)	106.3 (16.9)	96.7 (21.2)	$t = 1.73$
CBCL externalizing score	66.8 (8.8)	66.1(9.7)	$t = 0.26$
ECBI severity score	151.8 (28.6)	148.9 (36.5)	$t = 0.30$
Caregiver			
Primary's age	40.9 (8.0)	35.8 (7.4)	$t = 2.27^*$
Married (%)	54.0	44.0	$\chi^2 = 1.82$
Education level ^b	46	39	$\chi^2 = .03$
Annual income ^c ($n = 24,21$)	58	52	$\chi^2 = .01$
SES Hollingshead score ^d	46.2 (13.7)	39.1(14.7)	$t = 1.71$

Note: PPVT = Peabody Picture Vocabulary Test; CBCL = Child Behavior Checklist; ECBI = Eyberg Child Behavior Inventory; SES = socioeconomic status.

^aPercent of families who received therapeutic services within 4 months of starting Project TEAM. ^bPercentage of college graduates. ^cPercent of caregivers with annual income \geq \$31,000. ^dScore ranges from 8 to 66 and is based on occupation and education.

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

Procedure

Assessment

Interested parents called the research center and were phone-screened to determine eligibility. Next, information about the program, a consent form, and a short packet of child behavior questionnaires for the parents and teacher were mailed to the families. Subsequently, families whose child met inclusion criteria (as detailed earlier) were mailed a second set of questionnaires and scheduled for an in-person assessment. Families were randomly assigned to an early-treatment group or a delayed-treatment (waiting list) group. For every 12 families who sequentially entered the program, approximately half were randomly assigned to early treatment and half to delayed treatment. The early-treatment groups completed assessments prior to treatment and immediately following treatment. The delayed-treatment groups received a prewaitlist and postwaitlist assessment (corresponding to the early-treatment groups), as well as a postdelayed treatment assessment. Families in immediate and delayed treatment completed a follow-up assessment (phone inter-

view and a small set of mailed questionnaires for parents and teacher) that took place approximately 5 months after their last treatment session. Eight treatment groups were conducted, ranging in size from four to six families. Twenty-four families completed the early treatment and 23 completed the waitlist phase. Of these 23 waitlist families, 8 declined participation in the delayed-treatment groups. Thus, 39 participants ultimately completed the treatment groups.

Curriculum

Manuals with detailed curricula for the parent group and the child group are available from the authors.

Leaders

Each parent group and child group had two co-leaders. The parent groups were conducted by two doctoral students in clinical psychology; the senior author was a coleader for four of the eight treatment groups. In the child groups, at least one of the leaders was a doctoral student in clinical psychology and the other leader was experienced in behavior management with children. Several leaders conducted more than one group; in all, there were 9 parent-group leaders and 11 child-group leaders.

All leaders were given the detailed treatment manual and spent several sessions reviewing procedures with the senior author. During all treatment groups, the leaders met with the authors weekly for training, supervision, and feedback. Leaders specifically reported on any ways that group procedures departed from the treatment protocol to ensure treatment integrity. Additionally, leaders completed treatment integrity forms. Based on a selection of 18 forms representing a range of leaders across different sessions, 10 reported following the curriculum exactly as intended. The remaining 8 forms indicated only minor deviations from the curriculum due to time constraints. In these instances, the material was summarized (rather than discussed or conveyed via role-play) or assigned for homework to be reviewed at the beginning of the following session.

Parent and Child Together Groups

For the first half-hour of every group meeting, the parents and children met together around a joint activity. This together time was designed to provide families with the opportunity to watch therapists model positive reinforcement, communication skills, perspective taking, feeling expression and acknowledgment, and anger-management strategies and practice techniques while engaging the children in creating art projects that would be used at home to reinforce concepts and behavior management strategies taught in the parenting group. Additionally, these pregroup sessions increased the likelihood that late parents would not miss any of the

parent group. Following together time, the parents and children split up into their 90-min separate meetings.

Parent Groups

The parent component consisted of nine 1½-hr group sessions and three 40-min individual sessions. At the end of the 12 weeks, parents were provided with referrals (when needed) and feedback on positive changes, as well as areas still needing improvement. The curriculum focused on providing parents with support in the following areas: (a) increasing knowledge and application of specific behavior management techniques to reduce negative and increase positive behaviors; (b) developing strategies for being more consistent; (c) reducing distorted cognitions and negative response patterns; (d) building a positive and mutually rewarding relationship with their child; (e) practicing problem solving, feeling expression, and anger-management skills with their children; and (f) improving confidence in their parenting skills. Each session consisted of role-plays, lectures, discussions, and small-group exercises. Many of the parenting concepts were illustrated and discussed via “coping–modeling” scenarios in which the leaders role-played problematic implementations of parenting techniques and then parents used the behavioral paradigm to problem solve.

Parents were also given the opportunity to practice what they learned with in vivo experiences during together time. Also, they were assigned homework every week, which consisted of articles, summary sheets, and practice assignments. At the beginning of each session, the homework was collected, and questions, obstacles, and successful experiences were discussed. At the end of every session, parents received a summary of the child-group curriculum. To increase attendance and decrease dropouts, parents were provided with child care, evening sessions (after-work hours), follow-up calls after missed groups, and make-up sessions. Additionally, parents paid a minimal fee for the services and were encouraged to bring a supportive person to the groups.

Individual Meetings

For three sessions (the weeks after Group Sessions 2, 5, and 9), the parent coleaders met individually with the caregivers for 40 min. While each parent leader met with an individual family, the two children attended an individualized child group. Leaders reviewed the application of behavior management techniques at home and then provided feedback, answered questions, and facilitated problem solving. The manualized script took the form of a flow chart so that leaders could address families’ individual needs. Also, in the first session parents were videotaped with their children while practicing strategies presented in group for “positive playtime.” Then parents watched their own videotape and were encouraged to self-evaluate, problem solve,

and reflect on their child's positive response to this style of play. In the second session, parents and leaders reviewed the individualized behavior reward charts and discussed practical and cognitive obstacles, as well as possible changes in antecedents and consequences to increase success.

Child Groups

We viewed this component as a pilot test and did not evaluate its specific effects. The child sessions consisted of eight 1½-hr weekly groups and three weekly 40-min sessions in pairs (during their parents' individual meetings). The groups focused on problem solving, anger management, and identification and appropriate expression of feelings. A token economy system was used to reinforce children for positive behaviors.

Measures

Before treatment, parents completed a demographic questionnaire and children were administered the Peabody Picture Vocabulary Test-Revised (Dunn & Dunn, 1981), which provides standard scores and age equivalents for receptive language ability. It was used only to assure that children did not have cognitive delays.

Outcome Measures: Child Behavior Measures (By Parent)

CBCL. The CBCL (Achenbach, 1991), our primary measure of child behavior problems, is a widely used parent-completed rating scale. Parents indicate the degree or frequency of 113 problem behaviors on a scale of 0 (*not true*), 1 (*somewhat or sometimes true*), or 2 (*very true or often true*). Raw scores are converted to *T* scores, based on age and sex norms; scoring yields internalizing and externalizing broadband scores, in addition to eight narrowband scores, including aggression. We used only the narrowband aggression score (borderline score is 68 and above; clinical range is 70 and above), as this scale reflects aggression and noncompliance, the major foci of our intervention.¹ The CBCL correlates highly with other problem behavior questionnaires (e.g., .91 with the Conners Parent questionnaire; Achenbach & Edelbrock, 1983).

¹The commonly reported externalizing broadband score (borderline 60 to 63; clinical range 64 and above) is comprised primarily of the Aggression subscale (61% of the items), with the remainder being delinquency items that are less appropriate for our child age range. Nevertheless, we also conducted all relevant analyses substituting the externalizing broadband score for the aggression narrowband score, and, although the effects were consistently stronger when the Aggression scale was used alone, in no case was there a difference in whether the CBCL result was significant. We included the externalizing scores in Tables 1 and 4 as these may be more familiar to the reader.

ECBI. The ECBI (Robinson, Eyberg, & Ross, 1980) is a measure of child conduct problems. Parents indicate the existence of 36 specific conduct problem behaviors and then rate the intensity of the problems on a 1 to 7 scale. The ECBI has excellent validity (e.g., it can distinguish children with conduct disorders from non-clinic controls) and high internal consistency (alphas for problem and intensity scales of .91 and .93; Burns & Patterson, 1990). The clinical cutoff score for the problem scale is 12 or greater and for the intensity scale is 128 or greater. As these are highly correlated, we analyzed just the intensity scale (alpha = .91 in this sample).

Home Situations Questionnaire (HSQ). The HSQ (Barkley, 1981) evaluates the extent to which the child's attention or compliance problems disrupt commonly encountered home situations (e.g., mealtimes, bedtimes). Parents evaluate whether problems occur in 16 situations and then rate the severity from 1 (*mild*) to 9 (*severe*). According to Altepeter and Breen (1989), the mean severity score significantly correlated with the Conners Conduct Problems factor (.60), Impulsive-Hyperactive factor (.58), and Hyperactive Index (.46), and alpha coefficients ranged from .82 to .88; in this sample, alpha = .80.

Three Behavior Global Change Rating. Parents initially selected three behaviors of primary concern. Following the treatment or waitlist period, parents rated the degree of change in these three behaviors on a scale from 1 to 9; anchors included 1 (*much negative change*), 3 (*worse*), 5 (*same*), 7 (*better*), and 9 (*much positive change*). All but 6.8% of parents selected aggression, noncompliance, or both; at least one aggressive behavior was selected by 74% of the parents and at least one noncompliant behavior by 87%. For analyses, each selected behavior was classified as aggression, noncompliance, or other.

Outcome Measures: Child Behavior Measures (by Teacher)

TRF. The TRF is the teacher version of the CBCL. There are 118 problem items, scored on the same 3-point scale as the CBCL. The externalizing scores correlate highly (.76 to .84) with the negative subscales of the School Social Behavior Scale (Emerson, Crowley, & Merrell, 1994).

SSQ. The SSQ (Barkley, 1981) is the teacher version of the HSQ; teachers are asked to rate the degree of problems in 12 commonly encountered school situations. Breen (1988) reported moderately high correlations between the SSQ summary scores and several expected factors from the Connors Teacher Questionnaire and the CBCL (.50 to .63). Alpha coefficients

ranged from .82 to .88 (Altepeter & Breen, 1989); in this sample, alpha = .86.

Walker–McConnell Scale of Social Competence and School Adjustment. This 43-item questionnaire measures school-related social skills. Teachers rate the children on a 4-point scale, and raw scores are converted to standard scores. Higher scores indicate greater social skills. The manual (Walker & McConnell, 1995) provides numerous examples of high reliability and validity, with alpha of .97; in this sample, alpha = .93.

Outcome Measures: Parenting Practices

Alabama Parenting Questionnaire (APQ). The APQ (Frick, 1991) is a 42-item questionnaire that assesses parenting practices within six domains. This study used the domains of positive parenting (6 items), parent involvement (10 items), and inconsistent discipline (6 items). Items are rated on a scale from 1 (*never*) to 5 (*always*). The APQ is effective in differentiating families of children with disruptive behavior disorders from families of control children (Shelton, Frick, & Wootton, 1996). Frick (1991) reported high internal consistency for these scales (alpha ranged from .67 to .80); in this sample, alpha = .78 (positive parenting), .67 (parent involvement), and .83 (inconsistent discipline).

Parent–Child Relationship Questionnaire (PCRQ). The PCRQ (Furman & Buhrmester, 2001) evaluates parenting practices, attitudes, and feelings toward their children. Five factors are derived from the PCRQ, but we used only Personal Relationship (10 items) and Power Assertion (12 items). Parents rate each item from 0 (*hardly at all*) to 4 (*extremely much*). In this sample, alpha = .71 (Personal Relationship) and .78 (Power Assertion).

Consistency question. Parents were asked to rate their level of consistency in following through with consequences, with a scale of 0 (*not at all consistent*), 1 (*not very consistent*), 2 (*somewhat consistent*), 3 (*consistent*), or 4 (*very consistent*).

Outcome Measures: Parenting Attitudes and Stress

Index of Parental Attitudes (IPA). The IPA (Hudson, 1982) is a 25-item questionnaire designed to measure parent–child relationship problems via parents' feelings and attitudes toward their children. Parents rate problems on a 7-point scale ranging from 1 (*none of the time*) to 7 (*all of the time*). The IPA has excellent known-groups validity, as well as

internal consistency, with an alpha of .97 (Hudson, 1992); in this sample, alpha = .91.

Parenting Sense of Competence (PSOC). The PSOC (Gibaud-Wallston, 1978), designed to measure parenting self-esteem, was revised and validated by Johnston and Mash (1989) to reflect two domains: satisfaction (nine items: parenting frustration, anxiety, and motivation) and efficacy (seven items: competence, problem-solving ability, and capability in the parenting role). Johnston and Mash reported alpha coefficients of .75 (satisfaction), .76 (efficacy), and .79 (total); in this sample, alpha = .79 (satisfaction), .75 (efficacy), and .65 (total).

Parenting Stress Index (PSI). The PSI (Abidin, 1997), designed to measure the extent to which parents are experiencing stress, is composed of a 54-item parent domain and a 47-item child domain. The PSI has high validity, as well as internal consistency with alpha reliability coefficients of .89 (child), .93 (parent), and .95 (total; Abidin, 1997).

Treatment-Related Measures

Behavioral Vignettes Test–Hyperactivity. The Behavioral Vignettes Test–Hyperactivity (Baker, 1989) is a 15-item multiple-choice questionnaire assessing parents' knowledge of behavior management principles as applied to children with behavior problems. Each question is a vignette about a child problem with four response alternatives. The total score is composed of the number of correct answers.

Leader evaluation. Group leaders scored parents' compliance with treatment and overall success on 12 items. Four straightforward items were recorded by one leader: attendance (with and without make-ups), homework completion, and compliance with keeping behavior records. The remaining items (e.g., involvement in group, ability to set up programs) required more judgment and were rated by both leaders (phi ranged from .63 to .86).

Parent Satisfaction Questionnaire. In the Parent Satisfaction Questionnaire (Baker, 1989), parents anonymously rate their satisfaction with the program on a number of different dimensions on 4-point or 5-point scales, including appropriateness of treatment approach, helpfulness and competence of group leaders, usefulness of various treatment components, and their own level of participation and learning.

Results

Treatment Efficacy: Treatment Versus Waitlist Conditions

Measures of treatment outcome were considered in four conceptual groupings: child behavior–parent report (three measures), child behavior–teacher report (three measures), parenting practices (six measures), and parent attitudes and stress (three measures). Repeated-measures multivariate analyses of variance (MANOVAs) were conducted with each conceptual grouping and are reported in the following sections. Table 2 shows the means and standard deviations for dependent variables, as well as condition (treatment, waitlist), time, (pre, post), and Condition × Time effects for univariate repeated-measures analyses of variance (ANOVAs). The conditions differed at pretreatment on the teacher measures, with the SSQ severity score showing the greatest difference; when the SSQ

was covaried, the Condition × Time interactions were similar to those in Table 2, except that PCRQ power and PSOC Efficacy Condition × Time effects dropped to $p < .10$.

Child Behavior Problems (Parent)

A MANOVA was conducted across the main outcome measures, the three caregiver-completed child behavior problem scales (CBCL Aggression, ECBI, HSQ). There was no condition effect, approximate $F(3, 38) = 0.74$. The time effect was significant, $F(3, 38) = 15.05, p < .001$, and the Condition × Time interaction was significant, $F(3, 38) = 5.96, p = .002$ ($\eta^2 = .32$). The ANOVAs, shown in Table 2, revealed highly significant time effects for all three measures, indicating significant overall improvements in child disruptive behavior. The Condition × Time effects were all statistically significant, indicating that treatment-condition children showed significant benefits relative to

Table 2. *Dependent Variable Means and Standard Deviations and Main Effects and Interactions of Group and Time*

Measure	Treatment Condition								F Group (df = 1, 38)	F Time (df = 1, 38)	F G × T (df = 1, 38)
	Treatment				Waitlist						
	Pre		Post		Pre		Post				
M	SD	M	SD	M	SD	M	SD	F Group (df = 1, 30)	F Time (df = 1, 30)	F G × T (df = 1, 30)	
Child behavior problems (parent ratings)											
CBCL aggression	69.7	9.4	59.9	9.7	66.4	10.8	65.2	12.3	0.12	24.96***	15.59***
ECBI severity	150.1	27.5	123.5	23.3	146.4	38.4	135.8	34.8	0.22	32.79***	6.01*
Home situations severity	49.8	16.0	29.6	13.8	51.4	28.9	43.6	24.8	1.72	22.69***	4.44*
Child behaviors (teacher ratings)											
TRF aggression	66.2	9.8	65.4	12.3	75.7	10.1	71.7	11.1	6.75*	1.14	0.51
School situations severity	28.3	19.4	28.4	28.2	46.1	18.7	45.6	24.9	6.86*	0	0
Walker McConnell	134.1	33.4	133.0	26.8	110.5	23.9	113.4	26.1	6.53*	0.03	0.15
Parenting practices											
PCRQ power assertion	21.1	6.3	18.3	3.4	21.4	5.2	22.1	5.2	2.13	1.71	4.26*
PCRQ personal relationship	26.1	3.7	25.8	4.1	27.2	4.4	27.1	4.3	1.10	0.16	0.05
APQ inconsistent discipline	16.8	4.0	13.8	3.6	14.4	4.1	14.7	4.3	0.47	8.37**	12.78***
APQ parent involvement	38.9	4.0	39.3	4.7	39.1	5.0	39.3	5.7	0.00	0.24	0.02
APQ positive parenting	27.0	2.7	26.1	3.0	25.8	3.1	25.9	3.0	0.65	0.98	1.59
Interview consistency	2.1	1.0	2.8	0.7	2.5	1.1	2.5	1.0	0.05	5.82*	6.48*
Parenting attitudes and stress											
Index of parental attitudes	24.9	10.3	19.2	8.9	21.8	7.9	20.1	8.6	0.18	11.53**	3.35(*)
PSOC efficacy	19.1	5.6	22.4	6.3	20.9	5.7	21.0	6.2	0.02	5.94*	5.26*
PSOC satisfaction	26.6	7.8	29.9	6.6	29.2	6.4	29.7	6.0	0.46	4.48*	2.29
PSI child	130.8	20.3	115.7	20.7	126.8	24.6	122.0	22.3	0.04	15.25***	4.16*
PSI parent	131.1	28.0	124.2	24.5	125.0	27.6	127.0	31.3	0.04	0.88	2.91

Note: G = group; T = time; CBCL = Child Behavior Checklist; ECBI = Eyberg Child Behavior Inventory; TRF = Teacher Report Form; PCRQ = Parent–Child Relationship Questionnaire; APQ = Alabama Parenting Questionnaire; PSOC = Parenting Sense of Competence; PSI = Parenting Stress Index.

(*) $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

controls, in aggression, in conduct problems, and across situations. Standardized effect sizes based on post-means (Cohen's *d*, bias corrected) were in the medium range (CBCL Aggression: .47; ECBI: .41; HSQ: .69).

To explore the consistency of child change across the eight treatment groups, we conducted two MANOVAs utilizing these same three child behavior problem measures. Each of the eight treatment groups improved from pre- to posttreatment, but the Treatment Group \times Time effect was not significant. Similarly, improvement on child measures did not differ significantly between the four groups led by the first author and the remaining four groups.

We further examined individual scores in the treatment condition to assess the clinical significance of changes. Following Jacobson, Follette, and Revenstorf's (1984) guidelines, we examined the percentage of children whose scores were reduced significantly and the percentage of these who moved to normative functioning. Significant score reduction, Jacobson et al.'s reliable change index, is each child's difference score (post – pre) divided by the standard error of measurement. "A reliable change index larger than ± 1.96 would be unlikely to occur ($p < .05$) without actual change" (Jacobson et al., 1984, p. 344). Considering all three outcome measures, no child showed significant worsening on any measure. Fifteen children (68%) showed significant improvement on at least one measure. On CBCL Aggression, 13 children (59%) had clinically significant improvement (9 points or greater); 7 of these children (32% of all treatment children) also moved from the borderline or clinical range to the normative range. The remaining 6 children either had prescores in the normative range, albeit near the top ($n = 4$) or had pre- and postscores that remained in the clinical range despite a significant drop ($n = 2$). On the ECBI, which is focused more on conduct problems, 9 children (41%) showed clinically significant improvement (25 points or greater). Although there was high stability from pre to post on the CBCL Aggression scale ($r = .76$) and the ECBI ($r = .78$), the HSQ showed no stability ($r = .06$). On the HSQ, 9 children (41%) showed clinically significant improvement (30 points or greater).

On the postassessment-only global behavior change scores (not shown in Table 2), treatment children improved significantly relative to waitlist children on aggressive behaviors (treatment $M = 6.9$, $SD = 1.5$; waitlist $M = 5.8$, $SD = 1.0$; $t = 2.41$, $p < .05$) and noncompliant behaviors (treatment $M = 6.8$, $SD = 1.1$; waitlist $M = 5.9$, $SD = 1.4$; $t = 2.21$, $p < .05$). Behaviors classified as "other" improved equally in the two conditions (treatment $M = 6.8$, $SD = 1.3$; waitlist $M = 6.7$, $SD = 1.5$, *ns*).

Child Behavior Problems (Teacher)

A MANOVA was conducted across the three teacher-completed measures of child behavior shown

in Table 2. The condition effect was significant, $F(3, 30) = 3.21$, $p = .04$; teachers perceived greater problems in the waitlist children. Neither the time effect, $F(3, 30) = 0.76$, nor the Condition \times Time interaction, $F(3, 30) = 0.28$, approached significance. Exploratory ANOVAs were conducted for the three teacher-completed measures despite the overall nonsignificant MANOVA. No time effect or Condition \times Time interaction approached significance.

Parenting Practices

A MANOVA was conducted across the six parenting practice measures that are shown in Table 2. There was no condition effect, $F(6, 34) = 1.24$. The time effect was significant, $F(6, 34) = 2.76$, $p = .03$, and the Condition \times Time interaction was significant, $F(6, 34) = 4.28$, $p = .003$ ($\eta^2 = .43$). The ANOVAs, shown in Table 2, revealed significant Condition \times Time interactions on the three negative parenting measures (PCRQ power assertion, APQ inconsistent discipline, and consistency rating). Effect size based on post-means was large (.86) for power assertion. Effect sizes for inconsistent discipline and consistency rating were small (.22 and .35, respectively); however, there were small to medium effect sizes for premeasures on these variables in the opposite direction ($-.58$ and $-.37$). Treatment parents used fewer negative power tactics and showed more consistent discipline at posttreatment than at pretreatment, whereas waitlist parents' scores became slightly worse. The three measures of positive parenting (personal relationship, involvement, and positive parenting) were essentially unchanged in both conditions.

Parenting Attitudes and Stress

A MANOVA was conducted across the five measures of parenting attitudes and stress (IPA, PSOC Efficacy and Satisfaction, PSI Child and Parent scales). There was no condition effect, $F = 0.19$. The time effect was significant, $F(5, 36) = 3.40$, $p = .013$, but the Condition \times Time interaction was not, $F = 1.32$. Exploratory ANOVAs are shown in Table 2. The Condition \times Time interaction was significant for the PSOC Efficacy and PSI Child scales and approached significance for the IPA. Although both conditions showed positive changes over time on these measures of attitudes and stress, treatment condition parents reported greater improvements over time than did waitlist parents.

Mediators of Change

We examined the hypothesis that parenting behavior change mediated the relation between condition (treatment or waiting list) and child behavior problem change (Baron & Kenny, 1986). The mediator measure was a parenting practices change composite score. We created pretreatment to posttreatment change scores

for the parenting practice scores with a significant Condition \times Time effect (APQ inconsistent discipline, PCRQ power assertion, and consistency rating), converted them to z scores, and summed the z scores. The outcome measure was a child change composite score. We created pretreatment to posttreatment change scores for three child-behavior measures (Parents' CBCL Aggression, ECBI, and HSQ), converted them to z scores, and summed the z scores. The three conditions for testing a mediator effect were met: The independent variable (condition status) correlated significantly with the mediator (parenting practices change composite, $r = .54, p < .001$) and the outcome measure (child change composite, $r = .49, p = .001$); the mediator and the outcome measure also correlated significantly, $r = .64, p < .001$. The hierarchical regression analysis is shown in Table 3. When the parenting practices change composite was added to the equation, it accounted for significant variance in the child change composite. The condition part correlation dropped significantly, and condition status no longer contributed significantly, conditions for a full mediator (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). This analysis supports the hypothesis that the parent training intervention produced effects on child behavior through changes in parenting behaviors.

We also examined the further hypothesis that child behavior change mediated the relation between condition status and change in parental attitudes and stress. For this analysis, the mediator was the child change composite score and the outcome measure was a parental attitudes and stress change composite score. We created pretreatment to posttreatment change scores for IPA, PSOC Efficacy, and PSI Child, converted them to z scores, and summed the z scores. The three conditions for testing a mediator effect were met: The independent variable (condition status) correlated significantly with the mediator (child change composite, $r = .46, p < .001$) and the outcome measure (parent attitudes and stress change composite, $r = .37, p < .05$); the mediator and the outcome measure also correlated significantly, $r = .64, p < .001$. The hierarchical regression

analysis also is shown in Table 3. When the child change composite was added to the equation, it accounted for significant variance in parental attitudes and stress change. The condition part correlation dropped significantly, and condition status no longer contributed significantly, conditions for a full mediator. This analysis supports the hypothesis that changes in parental attitudes and stress are related to improvements in child behavior and are not the result of the group treatment experience per se.

Treatment Feasibility: Compliance and Acceptance

We examined dropout rates, participation indicators, and consumer satisfaction for all treatment participants. Nineteen of the 23 waitlist families (83%) subsequently began treatment; combined with the 24 immediate-treatment families, 43 families in total began treatment. The dropout rate was favorable; of the 43 families, 39 (91%) completed. Moreover, participation rates were favorable. Families who completed treatment had a high attendance rate; including make-up sessions, 90% of participants attended at least 80% of the sessions. More than 85% participated in discussions, and 72% completed at least half of the homework assignments. Parents showed modest but significant improvement in their understanding of behavioral principles. Behavioral Vignettes Test scores increased from pretest ($M = 8.4$) to posttest ($M = 9.8$), $t(35) = 3.92, p < .001$. Consumer satisfaction, obtained anonymously, was also high. Ninety-two percent rated the program as a "positive" or "very positive" experience, and none of the participants classified the program as a "negative" experience. All of the participants rated the leaders as being helpful and competent. Most participants (89%) now felt at least "somewhat confident" in managing their children's behavior problems.

Five-Month Follow-Up

Of the 39 participants who completed pre- and post-treatment questionnaires, 30 provided 5-month fol-

Table 3. Mediator Analyses

Model	R^2	B	SE	t	p	Part Correlation
Group status and child behavior change: Parenting practices as mediator ($n = 39$)						
1. Status	0.23	2.185	0.65	3.36	.002	0.479
2. Status		0.997	0.68	1.47	.15	0.186
Par. practices change	0.41	0.486	0.15	3.34	.002	0.422
Group status and parent attitudes/stress: Child behavior change as mediator ($n = 40$)						
1. Status	0.12	1.769	0.75	2.36	.02	0.353
2. Status		0.113	0.74	0.15	.88	0.019
Child behavior change	0.41	0.672	0.16	4.25	<.001	0.531

Note: Par. practices change = parenting practices change composite score (inconsistent discipline, power assertion, consistency rating). Child behavior change composite score (parent CBCL aggression, Eyberg Child Behavior Inventory, Home Situations Questionnaire).

low-up information. Repeated-measures ANOVAs were run to compare the 30 follow-up participants to the 9 without follow-up on all 17 variables from the parent and teacher ratings. No follow-up condition difference (families with or without follow-up) or Condition \times Time (pre–post) interaction was significant.

At follow-up, parents were asked to rate their children’s behavior problems relative to their functioning at posttreatment; the scale ranged from 1 to 9, including 1 (*much worse*), 5 (*same*), and 9 (*much better*). Parents reported further improvement in all three categories: aggression ($M = 6.7, SD = 1.4$), noncompliance ($M = 6.8, SD = 1.6$), and other ($M = 6.3, SD = 1.2$).

Repeated-measures ANOVAs were conducted on the three measures that were obtained at all three time points: the CBCL, the TRF, and the PSI. Pairwise comparisons were made with Bonferroni corrections. Table 4 shows the means across the three time points, with significance tests. Children’s CBCL scores (aggression and externalizing) at 5 months’ posttreatment continued to be significantly lower than at pretreatment. There was a continued, though not significant, decrease in problem scores relative to posttreatment.

The TRF scores (aggression and externalizing) immediately following treatment had not significantly differed from pretreatment scores. By the 5-month follow-up, however, this teacher-completed measure showed a significant drop relative to the pre- and posttreatment scores; children’s mean score had fallen from the clinical range into the normal range. Of the 26 follow-up TRFs, 6 were from the same teacher as at preassessment and 20 were from a different teacher; TRF scores pretreatment to follow-up did not significantly differ by whether the respondent was the same or a different teacher. The PSI total scores had shown significant improvement immediately following treatment, and the mean had dropped into the normal range. From posttreatment to fol-

low-up, PSI scores continued to drop, although the further change did not reach significance.

Discussion

Child Behavior Change

Children in the treatment condition showed behavioral improvements relative to the waitlist condition. Also, two of three children in the treatment condition showed a clinically significant decrease on at least one of the three problem behavior inventories. Parents also reported continued success at the 5-month follow-up: pre- to posttreatment reductions in children’s problem behaviors were maintained; the posttreatment to follow-up scores showed further problem reduction, though this change was not significant.

Although parents reported improvement in their children’s behaviors, teachers did not perceive any changes in child behavior problems or social skills immediately following treatment. For the most part, researchers have been unsuccessful at getting children’s behavior improvements at home to generalize to the school setting (Webster-Stratton, 1993), or at least to get teachers to recognize the differences. One exception (McNeil, Eyberg, Eisenstadt, Newcomb, & Funderburk, 1991) reported a generalization of behavior improvements from home to the school setting, though just for conduct problems. Given the limited school focus of Project TEAM, it is not surprising that there were no immediate behavior improvements at school. Although there is a need for evaluation of programs that include a much stronger school component with more teacher and peer involvement, there is some evidence that when programs focus too much on school intervention, the gains may not generalize to the home setting (Barkley et al., 2000). Although very few behavior programs have successfully coordinated parents

Table 4. Variable Means at Pretreatment, Posttreatment, and 5-Month Follow-Up

Measure	Time Period			F
	Pre	Post	Follow-Up	
Child behavior problems (parent)				
CBCL externalizing	66.1 _a	59.2 _b	55.9 _b	24.14***
CBCL aggression	68.2 _a	60.2 _b	57.4 _b	24.89***
Child behavior problems (teacher)				
TRF externalizing	65.3 _a	64.7 _a	59.3 _b	8.09**
TRF aggression	66.5 _a	66.2 _a	59.9 _b	12.32***
Parenting stress				
PSI Child Domain	129.3 _a	118.0 _b	115.7 _b	10.73***
PSI Parent Domain	129.4 _a	123.7 _{a,b}	118.8 _b	6.96**
PSI Total Score	258.7 _a	241.7 _b	234.5 _b	10.85***

Note: Means with different subscripts differ significantly at $p < .05$, using Tukey procedure. Parent ratings $F: df = (2, 27)$. Teacher ratings $F: df = (2, 23)$. Parenting stress $F: df = (2, 27)$. CBCL = Child Behavior Checklist; TRF = Teacher Report Form; PSI = Parenting Stress Index.

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

and teachers in addressing the social and academic needs (Webster-Stratton, 1993), the FAST Track Program, combining school and home intervention components, produced behavioral and academic improvements in a group of young children with conduct problems (Conduct Problems Prevention Research Group, 1999). In the present study, the parent–teacher discrepancy in ratings could be due to a difference in perceptions rather than a difference in how the children behaved across settings. Perhaps the parents were more likely to rate their children as showing improvement because that was the expectation of the program. Yet treatment families did not report improvement on all of the variables assessed, which suggests that they were differentiating areas of improvement rather than blindly rating everything as being better.

By the 5-month follow-up, teachers' reports of child behavior improved significantly over pretreatment levels, with the mean externalizing score now within the normal range. These ratings cannot be explained as reflecting some systematic teacher or seasonal bias; the study had multiple ongoing treatment groups with posttreatment and follow-up assessments at all times during the year, and in some cases teachers differed at the various assessment points. Also, it is unlikely that these improvements are merely a result of developmental changes or the passage of time. Research findings consistently support the idea that children's externalizing problems are quite stable if left untreated (Campbell, 1995; Heller et al., 1996); in this study, at the postwaitlist assessment after a 3-month period, teachers' externalizing scores remained high and unchanged. It seems reasonable that as parents became less power assertive and employed more consistent discipline, children's behavior problems improved at home. Subsequently, parents may have become less stressed, improved their attitudes toward their children, and increased their sense of parenting efficacy. This combination of parent and child changes may have had a ripple effect, with children's behavioral improvements becoming increasingly more stable over time and across settings, eventually showing up at school. It is also possible, though, that teachers may have been influenced by parents' talks with them about positive behavior changes at home.

Although having a control condition during the follow-up period would have been helpful with some of the data interpretation, there would have been several drawbacks. Requiring children with severe behavior problems to wait approximately 9 months for the treatment program did not seem clinically or ethically feasible. Additionally, interpretation of findings could have been difficult because of an anticipated high drop-out rate.

Parenting Practices

Parents also reported improved discipline practices following treatment. Treatment-condition parents reported more consistent discipline (i.e., setting up consequences and consistently following through with them) and less negative and aggressive parenting (e.g., nagging, quarreling, spanking, yelling, inducing shame). Relative to waitlist parents, there was no differential change on positive measures of parenting (e.g., being involved, praising, helping). Shelton et al. (1996) found that the positive dimensions of the APQ (Involvement and Positive Parenting) did not differentiate parents of oppositional children from parents of control children. It is possible that our families did not start out needing to improve in these areas; our sample's norms (Involvement $M = 38.7$, $SD = 4.6$; Positive $M = 26.2$, $SD = 3.1$) were similar to those found by Shelton et al. (Involvement $M = 40.0$, $SD = 4.9$; Positive $M = 25.9$, $SD = 2.9$). Our hypothesis that behavioral parent training affects child behavior through the changes it brings about in parenting behaviors was supported by an analysis of mediator effects. This is consistent with a recent report of an intervention group targeting noncompliance in young boys of recently divorced mothers. The authors found that change in noncompliance was mediated by changes in maternal coercive discipline, as well as in positive parenting (Martinez & Forgatch, 2001).

Parental Attitudes and Stress

The treatment condition also demonstrated changes in parenting attitudes and stress relative to the waitlist condition. On one of the attitude measures, the PSOC, parents in the treatment condition showed relative improvement mainly in efficacy (i.e., competence, problem-solving ability, and capability in the parenting role). On the other attitude measure, the IPA, there was a trend toward improvement in the treatment condition relative to the waitlist condition (e.g., enjoying and accepting their children more). On the PSI, the treatment condition showed a significant decrease in child-related stress, relative to the waitlist condition. The average PSI score for the treatment condition parents dropped from the high range to within the normal range. Although other researchers of behavioral parent training have reported generalized family changes following treatment (Anastopoulos, Shelton, DuPaul, & Guevremont, 1993; Baker, 1996; Baker et al., 1991), they have rarely evaluated the source of the generalized improvements. Indeed, it is often assumed that components of the parent training that are focused on parental well-being (e.g., cognitions, anger management) directly account for such changes. Our analyses suggested that this positive change in parental attitudes

and stress was driven not by the experiences of participating in treatment groups, but by actual child behavior change. Treatment was effective in producing child behavioral improvements, and these, in turn, mediated positive changes in parental attitudes and stress.

Empirically Supported Treatment

A promising development in treatment research is the emphasis over the past decade on empirically validating programs (Chambless & Hollon, 1996; Patrick & Olson, 2000). This study successfully followed many of these guidelines, though with some limitations. Treatment efficacy was demonstrated through a randomized clinical trial, comparing a treatment condition that followed a manualized curriculum with a waitlist control condition, and assessment of the clinical significance of treatment response. Although some research may go further to demonstrate specificity by including an alternative treatment in the design, we followed Chambless and Hollon's dictum that a no-treatment control group addresses the fundamental question of whether the treatment works and is sufficient (other conditions having been met) to consider a treatment efficacious. The sample size was adequate to address the primary hypotheses, although further study with a larger sample would allow additional exploration of treatment outcome moderators.

The specific focus of treatment was aggressive and noncompliant behavior in young children. Although this was a community sample, recruited primarily through schools, two thirds of the families had previously sought professional help. Most children scored in the problem range on both parent- and teacher-completed measures of problem behaviors. Although samples drawn exclusively from clinics are considered by some authors to be more desirable, we note several considerations: (a) In this age range, clinic referrals often begin with the teacher, as ours did; (b) a fee was charged for the program; and (c) it was located in the Child Study Center at the University of California, Los Angeles, not readily distinguished by most parents from the many clinical programs in the on-campus medical center. We would argue that this was a reasonably representative sample of children with the specific problems targeted.

A limitation was in the reliance on parent report for many of the measures employed; the teacher reports did not corroborate parent reports until follow-up. Parent reports may have introduced some bias in perception of benefits and also heightened the relations demonstrated among measures of child behavior problems, parenting practices, and parental attitudes and stress. Although some domains of interest must rely on self-report (e.g., parental attitudes), further study of the

Project TEAM program would benefit from behavioral observations of parenting practices and child behavior.

Beyond efficacy, the effectiveness of the program (Chambless & Hollon, 1996) was demonstrated primarily in the area of treatment feasibility (acceptance and compliance). Only four families dropped out, and the remaining families had good attendance. This dropout rate compares favorably to rates reported in the parent training literature (Barkley et al., 2000; Forehand, Middlebrook, Rogers, & Steffe, 1983). Furthermore, families were highly satisfied with the program, the content and the style of the groups, and the leaders.

Especially promising were indicators of the process whereby behavioral parent training produces child behavior change. Although the belief that changes in parenting practices are responsible for child improvement is inherent in the design of these programs, the demonstration that increased parental consistency and decreased power assertion and negativity mediated child change is useful. Moreover, although most professionals believe that a parent training program has generalized benefits to the family, especially if its focus is not too narrowly on behavior modification techniques, our findings are consistent with the hypothesis that such changes result from the child behavior improvements rather than from simply participating in training. Treatment programs such as this one are likely to be especially effective for families with young children, intervening before problem behaviors become more severe, intransigent, and generalized, and while parenting practices are still malleable.

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