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Treating Children With Early-Onset Conduct Problems: Intervention Outcomes for Parent, Child, and Teacher Training

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Families of 159, 4- to 8-year-old children with oppositional defiant disorder (ODD) were randomly assigned to parent training (PT); parent plus teacher training (PT + TT); child training (CT); child plus teacher training (CT + TT); parent, child, plus teacher training (PT + CT + TT); or a waiting list control. Reports and independent observations were collected at home and school. Following the 6-month intervention, all treatments resulted in significantly fewer conduct problems with mothers, teachers, and peers compared to controls. Children's negative behavior with fathers was lower in the 3 PT conditions than in control. Children showed more prosocial skills with peers in the CT conditions than in control. All PT conditions resulted in less negative and more positive parenting for mothers and less negative parenting for fathers than in control. Mothers and teachers were also less negative than controls when children received CT. Adding TT to PT or CT improved treatment outcome in terms of teacher behavior management in the classroom and in reports of behavior problems.

National survey data suggest that the prevalence of aggressive conduct problems in preschool and early school-age children is 10% to 25% (Snyder, 2001). Evidence suggests that without early intervention, behavioral problems such as aggression, oppositional behavior, or conduct problems in young children may become crystallized patterns of behavior by age 8 (Eron, 1990), beginning a trajectory of escalating academic problems, school drop-out, substance abuse, delinquency, and violence (Snyder, 2001). Clearly, treating aggressive behavior in its more malleable form prior to age 8, and thus interrupting its progression, is of considerable benefit to families and society.

Parenting interactions are the most well researched and most important risk factor for early-onset conduct problems. Parenting practices associated with the development of conduct problems include inconsistent and harsh discipline and low nurturing (Patterson & Dishion, 1985). The most influential developmental model for describing the development of oppositional behavior and aggression in children is Patterson's theory of the "coercive process" (Patterson, Reid, & Dishion, 1992), a process whereby children learn to escape or avoid parental criticism by escalating their negative behaviors. This, in turn, leads to increasingly aversive parent interactions and escalating dysregulation on the part of the child. These negative parent responses directly model and reinforce the child's conduct problems. As a result of Patterson's theory, the primary approach to treating early onset conduct problems has been to teach parents to be more positive and less harsh in their discipline style (Brestan & Eyberg, 1998). The short- and long-term success of parent training programs, particularly when they address other family issues, including interpersonal communication, support, depression, and conflict resolution in addition to parenting skills, has been documented by significant improvements in children's (and parents') behaviors at home and improved child adjustment for at least two thirds of treated families (Brestan & Eyberg, 1998; Taylor & Biglan, 1998). These studies provide evidence supporting the social learning theories that highlight the crucial role that parenting effectiveness plays in determining children's social competence and reducing conduct problems.

Despite the clear evidence of the efficacy of parent training as a treatment approach, this approach has shortcomings. First, studies have indicated that al-

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though parent training results in predictable improvements in child behavior at home with parents, it does not necessarily result in improvements in oppositional behavior at school with peers (Taylor & Biglan, 1998; Webster-Stratton, 1990b). Second, some parents of children with conduct problems cannot, or will not, participate in parent training because of work conflicts, life stress, personal psychopathology, or lack of motivation (Spoth, Redmond, Hockaday, & Shin, 1996).

These limitations of parent training have led to a second approach to treating conduct problems, namely, directly training children in social skills, problem solving, and emotional management. The theory underlying this approach is the substantial body of research indicating that children with conduct problems show cognitive and social skills deficits with peers (Coie & Dodge, 1998). Research has also suggested that these deficits lead to coercive processes that parallel parent–child coercive interactions but occur with peers in the classroom and contribute to the ongoing development of conduct problems (Dodge, Coie, Pettit, & Price, 1990).

To help children with conduct problems to have more positive interactions with peers, a number of individual or small-group child treatments have been evaluated (e.g., Kazdin, Esveldt, French, & Unis, 1987). This treatment approach for diagnosed children has been shown in a limited number of studies to be promising but less effective than parent treatment studies (Asher, Parkhurst, Hymel, & Williams, 1990; Kendall, 1993). A few controlled-trial evaluations with diagnosed children have demonstrated that teaching children social skills, problem-solving, and anger-management strategies is effective for reducing conduct problems (Kazdin, Siegel, & Bass, 1992; Lochman & Curry, 1986; Webster-Stratton & Hammond, 1997) in the short term (effect sizes range from .20 to .67). However, some programs have been shown to be limited in generalization of skills outside of the training setting (Gresham, 1995), and long-term effects could not be confirmed in two recent meta-analyses (Beelmann, Pfingste, & Losel, 1994; Gresham, 1998). A recent treatment study with young children with oppositional defiant disorder (ODD) and conduct disorder (Webster-Stratton & Hammond, 1997) indicated that combining child training with parent training resulted in significant reductions in children's conduct problems both at home with parents and with peers and also improved the long-term outcome for these children compared with children whose parents only received parent training. It was theorized that child training reduced the coercive process with peers as well as with parents and contributed to the enhanced effects. Nonetheless, one third of these children still had problems at school according to teachers at follow-up assessments.

It may be that the failure of parent and child treatment programs to consistently produce cross-setting generalization and long-term improvements in some children stems from the narrowness of the intervention focus on a single risk domain. Most parent programs exclusively focus on training parents to manage children's behavior at home rather than helping parents to address their children's problems at school or with peers. Parent training programs also often fail to involve teachers in treatment. Child social skills programs, on the other hand, do address children's social deficits but are often delivered without input from or training for the parents and teachers, making generalization of new concepts across settings difficult.

As noted earlier, negative academic and social school experiences contribute to the ongoing development of conduct problems. In addition to social skills and problem-solving training for children with conduct problems, it is important that teachers understand how to prevent social rejection and manage aggression in the classroom. Poor classroom management skills and low rates of teacher praise lead to classrooms with higher levels of aggression and rejection; these, in turn, have been shown to influence the development of individual children's continued conduct problems (Kellam, Ling, Merisca, Brown, & Ialongo, 1998). Aggressive children often develop coercive interactions with teachers and receive less support, nurturing, and teaching and more criticism in the classroom (Dodge & Feldman, 1990; Patterson et al., 1992). Frequently, aggressive children are expelled from classrooms or sent to the office for long periods of time. Lack of teacher support and exclusion from the classroom exacerbates these children's social and academic problems (Stage & Quiroz, 1997).

We hypothesized that more effective treatment models would include training for teachers in effective classroom management strategies as well as methods to promote teacher–parent networks. Children will benefit because of teachers' increased expectations and support for their students' social and academic performance (Reid & Eddy, 1997) and a consistent socialization process from school to home. Indeed, the prevention literature (with nondiagnosed high-risk children) indicates that multicomponent interventions directed at more than one risk domain show considerable promise in preventing conduct problems (Conduct Problems Prevention Research Group, in press; Reid, Eddy, Fetrow, & Stoolmiller, 1999; Tremblay et al., 1996; Webster-Stratton, Reid, & Hammond, 2001).

In light of these findings, we evaluated the additive effects of a new theory-based teacher training intervention targeted at specific classroom risk factors (classroom management skills, collaboration with parents) in combination with either parent training (including a new component that focuses on school problems), child social skills training for treating young children with ODD, or both. No current studies exist that have examined the added benefits of combining teacher

training with parent training, child training, or both to treat young children with ODD in terms of short- or long-term follow-up. Moreover, no treatment studies could be found that evaluated outcome in terms of independent observations of children's interactions with peers and teachers in the classroom. These interventions were chosen for comparison, based on developmental theory concerning the role of multiple interacting risk domains (child, parenting and family, teacher and peer) in the development of conduct disorders. We examined the short- and long-term effects of intervening in one risk domain versus two or more risk domains in a sample of young children with ODD.

Families were assigned at random to one of six conditions: parent training alone (PT); child training alone (CT); parent training plus teacher training (PT + TT); child training plus teacher training (CT + TT); parent and child training combined with teacher training (PT + CT + TT); and a waiting list control group. Our prior research (Webster-Stratton & Hammond, 1997) indicated long-term benefits of combining CT with PT in terms of positive peer interactions in the laboratory but not student's interactions with teachers and peers in the classroom. Consequently, in this study, we were particularly interested in whether TT would add to PT or CT or CT + PT treatment conditions. We did not include a TT-only condition because we did not believe training teachers by itself would be a realistic treatment option for diagnosed children because of the central role that parents play in the development of conduct problems.

Thus, our aim was to improve the long-term outcomes of children with ODD by evaluating interventions that target multiple risk and protective factors and systems. We hypothesized that intervention combinations that combined teacher training with either PT or CT and therefore intervened in two or more risk domains for conduct problems would show greater generalization and clinical effectiveness across settings than treatments delivered in only one risk domain (i.e., PT or CT). We also hypothesized that conditions that included parent training would be more effective than conditions without parent involvement in the treatment (i.e., CT or TT + CT).

Methods

Procedures

Enrollment and assessments. Participants were recruited from families requesting treatment at the University of Washington Parenting Clinic, a clinic widely known in the region for its treatment of young children with conduct problems. About one third of the families were self-referred, and the remainder were referred by professionals in the community (20% by teachers and 38% by physicians). Families entered the study in three cohorts (50 to 55 families per cohort) in the falls of 1995, 1996, and 1997. Each family participated in assessments that included parent and teacher reports of child and adult behavior, independent observations of children with parents at home and with peers during a structured play session in the laboratory, and observations with teachers and peers in the classroom. In addition, children's social and problem-solving skills were tested. In all two-parent families, both fathers and mothers participated in the assessments (parents completed the report measures independently). Due to practical limitations, only the mothers received the weekly telephone calls concerning children's behavior at home. Enrollment and assessment procedures for all families and children in each cohort were identical.

Recruitment and assessments were completed between September and October of each year. Each year random assignment was conducted by lottery in November after all families in the cohort had completed baseline assessments. All families understood that they had a 1 in 6 chance of being assigned to a waiting list control condition that meant that they would wait approximately 9 months to receive treatment (after a second assessment). Assignment to group was conducted by drawing names until each treatment condition was full. Conditions that contained a CT component were capped at six families per group whereas conditions without the CT component were capped at eight to nine families per group depending on the number of two-parent families participating in the group. For this reason there are slight differences in the numbers of families per condition. Families in treatment groups did not cross condition. For example, children in the CT-only condition were assigned to a group with other children receiving only CT, and parents receiving PT-only would not be mixed with a group of parents receiving PT + TT. Treatment began in mid-November and lasted until April. Posttreatment assessments were completed before the end of the school year. One year later, in the spring, the assessments were repeated.

Observation procedures. For each assessment phase, each parent was observed on two different occasions at home interacting with their child for 30 min (in 5-min intervals) and was instructed to do what he or she would normally do at that time (e.g., make dinner, do chores, play, and so on). Thus a total of 60 min per parent–child dyad was obtained at each phase of assessment (baseline and two follow-up periods). Five trained observers had a minimum of 30 to 45 hr of training with videotapes and live observations over 3 months using the Dyadic Parent–Child Interactive Coding System–Revised (DPICS–R; Robinson & Eyberg, 1981; Webster-Stratton, 1989a). Reliability checks were randomly conducted on 20% of all home observations at pretreatment, posttreatment, and follow-up as-

sessments (in both conditions). Observers were blind to condition and coded equally in all conditions.

All children were also observed in the classroom for 60 min of structured and 60 min of unstructured time on four occasions at each assessment phase. Lastly, children were observed for 30 min in a playroom at our clinic with a same-sex peer. The same reliability procedures outlined previously for the home observers were conducted for the classroom and peer observers.

Participants

Child characteristics. Criteria for study entry were (a) the child was between 4 and 8 years old; (b) the child had no debilitating physical impairment, intellectual deficit, or history of psychosis and was not receiving any form of psychological treatment at the time of referral; (c) the primary referral problem was child misconduct (e.g., noncompliance, aggression, oppositional behaviors) that had been occurring for at least 6 months; (d) parents reported more than 10 child behavior problems (the recommended cutoff score for screening children for treatment of conduct problems) on the Eyberg Child Behavior Inventory (ECBI; Robinson et al., 1980); (e) the child met *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [*DSM–IV*] American Psychiatric Association, 1994) criteria for ODD; and (f) the child was enrolled in preschool or elementary school. An initial phone screen established that parents reported more than 10 problems on the ECBI. Next, families participated in a 2- to 3-hr intake interview that consisted of a structured diagnostic interview developed by our center; diagnosis was made according to *DSM–IV* criteria for ODD. Children who also had elevated attention deficit or hyperactivity symptoms were also included in this sample because of the high comorbidity of ODD and attention deficit hyperactivity disorder. Approximately 18% of the sample scored in the clinical range on the Child Behavior Checklist (Achenbach, 1991) attention problems subscale. Children with attention deficit hyperactivity disorder who had been on medication for more than 6 months were admitted into the study. Other parents considering medications were advised to wait until the end of treatment to make a decision. Approximately 25% were on psychostimulants for attention deficit hyperactivity disorder. No children were excluded for intellectual deficits. Three experienced master's- or doctoral-level therapists conducted the intake interviews. Random and regular review of videotaped interviews and intake notes conducted by the first author indicated 100% reliability of diagnosis of ODD among the therapists.

Study children were 90% boys, with a mean age of 70.99 months (*SD* = 11.47), and 79% were Euro-American. Twenty-six percent of the sample attended preschool, 29% kindergarten, 27% first grade, and 29% second grade. The mean number of pretreatment behavior problems according to the mother ECBI problem score was 21.10 (*SD* = 5.44), indicating that the children were in the clinical range according to Robinson et al. (1980); for normative sample nonclinic range, *M* = 7.1, *SD* = 7.7. Eighty-one percent of our sample had ECBI problem scores above the 90th percentile of the normative sample (>16). Home observations prior to treatment confirmed the ECBI parent reports, with 51.6% of the children exhibiting one or more deviant and noncompliant behaviors every 3 min (*M* = 16.37 *SD* = 20.96).

Parent characteristics. Study parents included 159 families. Of these, 25.8% were single mothers in which the father had little or no contact with the child (no father data or participation was sought for these families). The majority of the remaining 74.2% of the families were married, although a few divorced parents who shared custody of the child participated. In these cases, both parents were strongly encouraged to be involved in the assessments and treatments. In all cases in which two parents were involved in parenting, both parents agreed to participate in the assessments and treatment. There was no significant difference between treatment conditions according to family demographic variables such as race of parent or child, marital or single-parent status, or sex of child. See Table 1 for sociodemographic variables by treatment condition.

Treatments

CT. The children assigned to CT, CT + TT, and CT + PT + TT conditions came to the clinic "Dinosaur School," which was offered in weekly 2-hr sessions for 18 to 19 weeks (lasting approximately 6 months) with two therapists and six to seven children. The Dinosaur School program specifically addressed interpersonal difficulties that research has shown are problematic for young children (ages 4 to 8) who have ODD. These include lack of social skills and conflict resolution skills; loneliness and negative attributions; inability to empathize or to understand another's perspective; and problems communicating, playing, cooperating with peers, and complying with parent or teacher requests. In addition, weekly letters were sent to teachers and parents explaining the key concepts taught that week and the rationale for the targeted skill (e.g., sharing, teamwork, friendly talk, listening, compliance to requests, feeling talk, and problem solving). Teachers and parents were asked to reinforce the targeted social skills whenever they noticed the child using them in the home or school, and children were given weekly homework assignments to complete with their parents. Teachers and parents were provided with weekly good-behavior charts, and the children received bonus rewards for bringing these charts to the training session each week.

Table 1. *Demographic Measures at Pretreatment*

	PT (n = 31)		PT + TT (n = 24)		CT (n = 30)		CT + TT (n = 23)		PT + CT + TT (n = 25)		Control (n = 26)	
	M or %	*SD*	*M* or %	*SD*	*M* or %	*SD*	*M* or %	*SD*	*M* or %	*SD*	*M* or %	*SD*
Child's age (months)	70.17	11.47	67.42	14.26	73.50	12.05	74.48	12.87	69.84	11.31	70.35	16.54
Child's sex (% boys)	90.3%		91.67	28.2%	93.3%		91.3%		84.0%		88.5%	
Child's ethnicity (% Euro-American)	71.0%		83.33	38.0%	83.3%		78.3%		72.0%		84.6%	
Hollingshead Social Class category[a]	2.60	1.04	2.63	1.10	2.50	1.17	2.43	1.08	2.72	1.24	2.19	0.94
Hollingshead Social Position score[b]	30.50	13.70	30.50	14.15	28.50	15.18	28.43	15.78	32.60	17.26	25.42	13.26
Family income[c]	6.93	1.57	6.25	2.09	7.07	1.84	6.78	1.78	6.44	2.02	6.62	2.08
Mother's partner status (% partnered)	71.0%		62.5%		76.7%		73.9%		72.0%		88.5%	
Number years married	10.24	3.45	10.81	4.64	10.30	4.09	8.06	3.89	11.72	4.81	10.83	6.31
Total no. children in home	2.13	1.20	1.71	0.75	2.13	0.90	2.39	1.37	2.04	0.89	2.00	0.89
Mother's age (years)	37.26	5.94	38.33	4.48	38.00	6.60	35.78	5.58	39.52	6.78	36.27	6.29
Mother's education[d]	2.68	0.94	2.50	0.93	2.27	0.98	2.39	1.03	2.48	1.00	2.38	0.94
Mother's ethnicity (% Euro-American)	87.1%		95.8%		93.3%		91.3%		92.0%		84.6%	
Father's age (years)[e]	39.46	6.95	39.91	5.67	39.84	7.86	37.80	5.85	39.52	5.80	38.44	6.84
Father's education[de]	2.43	1.19	2.73	1.32	2.00	1.06	2.43	1.54	2.38	1.24	2.35	1.41
Father's ethnicity (% Euro-American)[e]	88.9%		95.0%		95.8%		90.5%		84.2%		87.5%	

Note: PT = parent training alone; CT = child training alone; PT + TT = parent training plus teacher training; CT + TT = child training plus teacher training; PT + CT + TT = parent and child training combined with teacher training.
[a]Social Class: 1 = major professional; 2 = minor professional; 3 = skilled professional; 4 = semiskilled; 5 = unskilled. [b]Social Position Score: High score denotes low social position. [c]Income scale: 1 = less than $5,000; 2 = $5,000–$8,999; 3 = $9,000–$14,999; 4 = $15,000–$20,999; 5 = $21,000–$28,999; 6 = $29,000–$39.999; 7 = $40,000–69,999; 8 = $70,000–$99,999; 9 =$100,000 or more. [d]Education scale: 1 = graduate school; 2 = 4 years college; 3 = partial college; 4 = high school graduate; 5 = partial high school. [e]*N*s for father measures are PT = 30; PT + TT = 22; CT = 26; CT + TT = 21; PT + CT + TT = 21; control = 26.

A more complete description of the videotape-training dinosaur curriculum and leader manuals are available (Webster-Stratton, 1990a).

PT. The parents assigned to PT, PT + TT, and PT + CT + TT conditions met at the clinic weekly in groups of 10 to 12 parents and 2 therapists for a 2-hr session. Over the course of 22 to 24 weeks, they watched the 17 videotape programs on parenting and interpersonal skills. The program is designed to reduce parents' coercive interactions and strengthen their positive interactions and relationships with their children. The theory, efficacy, and content of this intervention have been documented and described in detail elsewhere (e.g., Webster-Stratton, Mihalic, et al., 2001). In addition, the effectiveness of the specific treatment methods (videotape vs. group discussion vs. self-administered videotape) have been reported and have indicated the superiority of the combined group plus videotape approach plus trained therapist over the individual components (Webster-Stratton, 1989b).

TT. Teachers in the PT + TT, CT + TT, and PT + CT + TT conditions came to the clinic for 4 full days (32 hr) of group training sequenced throughout the school year (to correspond roughly with the beginning, first quarter, second quarter, and end of the PT and CT treatments). To promote teachers' attendance, substitute teachers were provided (trainings were held on school days) and credits offered. The teacher curriculum targets teachers' use of effective classroom management strategies for handling misbehavior, promoting positive relationships with difficult students, and strengthening social skills in all school settings (the classroom, lunchroom, playground, and bus). Workshop topics included promoting social skills through praise and encouragement, proactive teaching, using incentives to motivate children, strategies to decrease disruptive behavior, and collaborative approaches for working with parents.

In addition, teachers learn to prevent peer rejection by helping the aggressive child learn appropriate problem-solving strategies and helping his or her peers respond appropriately to aggression. Teachers are helped to have age-appropriate expectations and to be sensitive to individual developmental differences (i.e., variation in attention span and activity level and developmental ability) and biological deficits in children (e.g.,

unresponsiveness to aversive stimuli, heightened interest in novelty) and to understand the relevance of these differences for enhanced teaching efforts that are positive, accepting, and consistent.

Because preschool and elementary-school teachers were trained together, trainers facilitated many discussions of how to make material developmentally appropriate. Physical aggression in unstructured settings (e.g., the playground) was targeted for close monitoring, teaching, and incentive programs. In addition to the 4 days of training, the therapist who worked with the parents or children made two individual appointments with the teacher to develop an individual behavior plan for the child. These meetings were held at the school, and at least one meeting included the parents. A constant theme during this training process was to strengthen the teachers' collaborative process and positive communication with parents (e.g., the importance of positive phone calls home, regular meetings with parents, home visits, successful parent conferences). All of the three conditions that combined TT with either CT or PT or both included the therapist and parent visits to the school to help coordinate strategies across settings. More information about the content of this curriculum can be found in Webster-Stratton (1994b).

Treatment Conditions

PT. In the PT condition, parents participated in the parent group described previously (without any school consultations with the teacher).

CT. In the CT condition, the child participated in the child group described previously.

PT + TT. For those parents in the PT + TT condition, in addition to the PT program described previously, the parent training included information on supporting children's success at school. This included using the parenting principles (e.g., praise, attention, incentives, limit setting) to promote academic skills, learning effective interactive reading skills, setting up predictable home learning activities and homework routines, and collaborating and communicating with teachers regarding children's social and academic needs. The teachers of children in this condition received the TT.

CT + TT. In this condition children participated in the CT groups and their teachers attended the TT as described previously.

PT + CT + TT. The families assigned to this condition received concurrent parent and child training (the PT group contained the extra school curriculum described previously). The CT started 2 to 3 weeks after the PT group started and occurred at the same time in separate rooms. The teachers of children in this group received the TT.

Control group. The families assigned to the control condition received no treatment from the Parenting Clinic and had no contact with our therapists during the 8- to 9-month waiting period. Postassessments were conducted with these families during April and May (at the same time that treatment families were assessed). At the postassessment, families reported on other services received during the waiting period. Only one family had sought therapy (four sessions) for managing the child's problems from a private mental health professional. After the postassessment, control families were offered the parent training program.

Treatment Integrity

To ensure the integrity of treatment, therapists co-led their first parent or child group with the supervisor, followed a treatment manual for each session, and kept detailed notes of each session, documenting group process. All therapists completed weekly protocol checklists of standards to be covered in each session (i.e., agenda, number of vignettes, role-plays to be completed, and themes to be discussed), and these were monitored weekly to be sure therapists adhered to the protocols. All child and parent group sessions were videotaped for feedback and analysis at a regular weekly supervision meeting, and therapists received ongoing supervision, feedback, and training throughout the study. Finally, the supervisor randomly selected videotapes of group sessions for integrity checks. Treatment integrity was high due to the close monitoring, standardized materials (i.e., videotapes), and comprehensive training manuals. Analyses of checklists indicated that all the required videotape vignettes were shown and that all the homework was assigned.

The teacher training sessions also were manualized with detailed checklists outlining vignettes and content to be covered. All teacher training sessions were led by the study supervisor and one other highly skilled trainer. All training sessions were videotaped, and tapes were reviewed to ensure that training procedures did not vary across cohorts of teachers. Protocol checklists were also completed for every training session and indicated high adherence to the workshop standards. All the recommended videotape vignettes were shown.

Therapists

Eight clinicians and a supervisor served as therapists for the parent and child groups. Each had a master's or doctoral degree in a mental health related field (e.g., nursing, social work, psychology, education) and had had considerable experience (5 to 20 years) with children with behavior problems, family counseling, or

both. They received extensive training in the content and techniques of the interventions. The supervisor had a doctorate degree with 20 years' experience working with these families.

Attendance

Children in the CT condition attended an average of 16.4 (*SD* = 2.33) sessions; 90.0% attended 15 or more of the 18 sessions. Children assigned to CT + TT attended an average of 16.78 (*SD* = 1.35) sessions; 95.6% attended 15 or more of the 18 sessions. Children in the CT + PT + TT condition attended an average of 17.16 (*SD* = 1.96) sessions; 96% attended 15 or more of the 18 sessions. Analysis indicated no significant difference in the number of sessions children attended in the three groups.

For parents in the PT condition, mothers attended an average of 21.29 (*SD* = 1.64) sessions and fathers 21.17 (*SD* = 1.98) sessions; 100% attended 15 or more of the 24 sessions. In the PT + TT condition, mothers attended an average of 22.38 (*SD* = 2.28) sessions and fathers 21.12 (*SD* = 4.61) sessions; 95.4% attended 15 or more of the 24 sessions. For the CT + PT + TT condition, mothers attended an average of 22.36 (*SD* = 3.71) sessions and fathers 22.39 (*SD* = 1.91) sessions; 96% attended 15 or more of the 24 sessions. There was no significant difference in number of sessions attended by condition. For PT groups, parents could make up missed sessions by watching a videotape of the missed group and then meeting briefly with the therapist to discuss the material covered in the group and receive the homework assignment. Parents who completed this make-up process were given credit for attending the group. However, this make-up option accounts for less than 5% of the attendance figures reported earlier. There was no option to make up missed CT groups.

From the entire sample that completed baseline assessments, only four families dropped out of the project prior to beginning treatment and refused to participate in postassessments. Because there is no postassessment data for these families, their data could not be included in analyses of treatment effectiveness. Because of this we did not include these families in the attendance figures reported previously, but it is important to note we were unsuccessful in convincing these families to attend any treatment. No other families dropped out of treatment, and the rest of the sample completed postassessments regardless of how many sessions they attended. There was no significant difference in drop-out rate by treatment condition.

All 72 teachers in the TT condition attended or made up the 4 days of teacher training and all attended at least two meetings to work on individual behavior plans for the target child. No teachers dropped out of this condition, and no teacher had more than one child in the study.

Measures

Measures for this study were chosen to define each major outcome domain (i.e., positive and negative parenting, child social competence, child conduct problems at home and at school, teacher classroom management style) by multiple measures as reported by multiple agents (teachers, parents, independent observers). Composite scores were created for each domain by combining scales that taped different aspects of the target phenomenon. Because the scale ranges for the component scales were quite different, we converted each measure into percentile scales. For each of the component measures of a composite, subject raw scores were converted to percentile scale scores based on the range of each scale. The percentile scales for the component measures were then averaged to form the composite score. We used composite scores for two reasons. First, a composite score is likely to provide better measurement than a single measure or agent. The approach we used to develop composite scores followed a similar strategy to that used by Dishion, Patterson, Stoolmiller, and Skinner (1991). Scales for each composite score were selected from established measures based on our theory of what behaviors the intervention addressed. The fit of the different measures of each composite was examined using principal components analysis. A single factor solution was used, and measures with factor loadings of <.40 were eliminated (only three scales were discarded because of low factor loadings). Cronbach's α was used to evaluate the internal consistency of each composite score. Our second reason for using composite scores was to simplify the interpretation of our findings. Our measures include more than 49 separate summary scores (approximately two thirds are independent observations and one third are reports). With this many individual measures and nine planned contrasts for each outcome, we felt that reporting results for each individual summary score would be too cumbersome. Data for individual outcome measures is available on request from the authors.

Missing data were handled at two levels. An individual summary score was only computed if at least 60% of items that made up the scale were present. Similar guidelines were used for computing the composite scores; a composite score was considered missing if more than 60% of the summary scores in that composite were missing. Cases were excluded from analysis (on that composite only) if the composite score was missing at one of the time points.

Parenting Positive and Negative Composite Scores

Parenting style and skills were assessed using two parent-report and two observational measures described later. From these, positive and negative par-

enting composite score scores were derived. Factor analyses of parenting behaviors indicated that negative and positive parenting items clearly formed two separate factors with a correlation of –.22, $p < .01$. The negative parenting composite score included one scale from the Parenting Practices Interview (harsh–inappropriate discipline), two observational variables from the Coder Impressions Inventory for parents (CII; harsh–critical and family needs intervention), one variable from the DPICS–R (total number of critical statements made by the parent to the child), and one variable from mother telephone reports on the Daily Discipline Inventory (DDI; the ratio of critical to positive discipline). Cronbach's α for this composite score was .59.

The second parenting composite score, positive parenting, included one scale from the Parenting Practices Interview (supportive parenting), one summary score from DPICS–R (positive parenting), and one from the CII (nurturing–supportive parenting). Cronbach's α for the composite score was .55. Because most of the individual scales used in the composite scores have been described in detail elsewhere (Webster-Stratton, 1998), they are only briefly detailed in the following.

Parenting Practices Interview. This questionnaire was adapted from the Oregon Social Learning Center's discipline questionnaire and revised for young children. The two summary scores used in our parenting composite scores were (a) harsh–inappropriate discipline (seven items, including spank–swat–whip, slap–hit, yell, raise voice) and (b) supportive parenting (five items, including discussing problems, teaching another behavior, praising or rewarding good behavior, verbal encouragement, physical affection for good behavior). Internal consistency alpha coefficients were .71 for harsh discipline and .66 for supportive parenting.

DPICS–R. The DPICS, originally developed by Robinson and Eyberg (1981) and revised by Webster-Stratton (1989a), is an extensively researched observational measure for recording behaviors of children and their parents in the home. In this study we used two separate parent summary variables shown in our prior research (Webster-Stratton, 1985a, 1985b) to discriminate clinic and nonclinic families and abusive and nonabusive families in our parenting composite scores: (a) positive parenting (including acknowledgments, unlabeled and labeled praise, positive affect, and encouragement) and (b) total critical statements. Intraclass correlations coefficients as a measure of interrater reliability for DPICS–R mother summary scores were .96 for critical statements and .98 for positive parenting. Cronbach's α for positive parenting was .78. There was no internal consistency statistic for critical statements because the score consists of only one item.

CII–Parenting Style. The CII was adapted from the OSCL Impression Inventory. The CII is completed following a half-hour parent–child DPICS–R observation. Two scores from this measure were used in our parenting composite scores: (a) harsh–critical (12, items including lack of acceptance, condemnation and disregard for the child, criticisms, sarcasm, anger, and unreasonable requests), (b) family needs intervention (5-point scale in which observer rates his or her perception of the degree to which the family needs help), and (c) nurturing–supportive (13 items, including attentive to child, enjoyed parenting, patience with child, supportive and empathic, respectful of child). Critical parenting had acceptable internal consistency (Cronbach's α = .89) and interrater reliability (ICC = .54). Nurturing–supportive parenting had a Cronbach's α of .88 and interrater reliability of .67. Family needs intervention is only one item (ICC = .64).

Parent DDI. The DDI (Webster-Stratton & Spitzer, 1991) consists of a list of 19 negative and 19 prosocial behaviors commonly exhibited by children. At baseline, parents select those behaviors that they perceive as problems. These individually tailored checklists are used as the basis for phone calls conducted twice at baseline, immediately postintervention, and at follow-up assessment. During phone calls, mothers were asked report on the occurrence or nonoccurrence of the "target" behaviors for the previous 24 hr. If the behavior occurred, then the parents were asked how they handled the problem. The discipline responses were then coded according to the DDI rating system, which is summarized into six categories: physical force, critical verbal force, limit setting, teaching, empathy, and guilt induction. For this composite score, the ratio of critical verbal discipline to positive (limit setting, teaching) responses was used. Critical verbal consisted of 10 variables (e.g., yell, fight, threaten physical punishment, reject child, criticize). The DDI critical verbal has been shown to correlate with direct observations of mother behaviors with their children during home observations (Webster-Stratton & Spitzer, 1991). The test–retest reliability for the critical verbal discipline summary score was $r = .46$, the alpha = .50, and the ICC for interrater reliability was .90.

Child Conduct Problems at Home Composite Score

The conduct problems at home composite score includes one parent-report variable, the ECBI intensity score, and four independent observations of aggression and inappropriate behavior in the home (CII overall poor conduct and percentage time inappropriate, and DPICS–R total deviance–noncompliance and child

negative affect). Because these measures have been described in detail elsewhere (Webster-Stratton, 1998), they are only briefly detailed here. Cronbach's α for this composite score was .78.

ECBI. The ECBI (Robinson, Eyberg, & Ross, 1980) is a 36-item behavioral inventory of child conduct problem behavior for children 2 to 16 years old. Our studies have shown reliability coefficients for the ECBI scales to range from .86 (test–retest) to .98 (internal consistency). This study uses the Total Intensity score, an indicator of the frequency with which behavior problems occur. Cronbach's α was .92.

Independent observations of child in the home (DPICS–R). The DPICS–R coding system described previously was used also to record observed child behaviors. Two DPICS–R variables were used in the child conduct problems at home composite score: total child deviance (sum of whine, cry, physical negative, smart talk, yell, and destructive) plus noncompliance (child does not begin to comply to parent command within 5 sec) ICC = .97, Cronbach's α = .73, and a one-item rating of child affect; ICC = .95.

CII—Child. Described previously in relation to parent behavior, two child CII single-item variables were included in the conduct problems at home composite score: (a) percentage of time child acted inappropriately (ICC = .57) and (b) total overall poor conduct (ICC = .60).

Child Conduct Problems at School and With Peers Composite Score

This child negative composite score included two teacher report variables: Teacher Assessment of School Behavior (TASB; Aggressive Behavior scale) and the Teacher Rating scales of Perceived Competence Scale for Young Children (PCSC; behavior conduct score). The composite score also included two summary scores from our independent observations of teachers in the classroom (MOOSES; frequency of child negative behaviors with teachers and peers) and coder rating of poor authority acceptance from the Social Health Profile (SHP). The composite score included one variable from our independent observations of the child interacting with a peer in our laboratory, the Dyadic Peer Interaction scale (DPIS; total inappropriate behavior with peers [e.g., dyad was loud, physically active, impulsive, reckless]). Cronbach's α = .77.

TASB. This teacher-report measure (Cassidy & Asher, 1992) asked teachers to compare the target child with all of his or her classmates on four behavioral dimensions: social acceptance, aggressive, shy–withdrawn, and disruptive. Each dimension was assessed by three items with Cronbach's αs ranging from .62 to .91. Significant correlations have been found between the teacher assessments and peer sociometric measures. For this composite score we were interested in the target child's aggressive behavior, which has shown particularly good agreement between teachers and peers.

Teacher Rating Scales of the PCSC. The teacher PCSC (Harter & Pike, 1984) is the teacher's independent assessment of the children's competence and acceptance in four domains: scholastic ability, social acceptance, athletic ability, and behavioral conduct. Three items per subscale were presented. Domain scores were calculated as the mean of the three items. Reliability ranged from .70 to .90 for subscales. For this child negative composite score we utilized the poor behavioral conduct subscale.

MOOSES. The MOOSES classroom observation coding system developed by (Tapp, Wehby, & Ellis, in press) was used to code children's interactions with teachers and peers. Coders used portable computers to enter data directly into the computer. This study used a summary score for total negative behavior in class (including negative, aggressive, and disruptive behaviors with teachers and total physical and verbal aggression and negative behaviors with peers in structured and unstructured situations). Total conduct problems were calculated as rates per 30 min; Cronbach's α = .71.

SHP. This measure is a revised version of the Teacher Observation of Classroom Adaptation (Werthamer-Larsson, Kellam, & Oveson-McGregor, 1990) completed by the school observers after observing the child in the classroom. For the child negative at school composite score we used the poor authority acceptance summary score (14 items, including fighting, breaking rules, harming others, refusing to accept authority and reversed items, such as friendliness, staying on task, completing assignments, and self-reliance); α = .79 and interrater reliabilities, ICC = .73.

DPIS. Each child was asked to come to visit our playroom with a playmate. The friend was within 2 years of the target child's age and of the same sex. After an initial 15-min warm-up play period, the children were instructed to "Make the best thing you can together," with the emphasis placed on the cooperative aspect of their play activity. They were given one Etch-a-Sketch™ and a box of Lincoln Logs™ and were told that a picture would be taken of their "joint project" after they had completed it. They were given 10 min to complete the project.

The DPIS coding system is a derivative of the Dyadic Relationships Q-set developed by Akerns (1988) and the Peer Problem-Solving Interaction Communication

Affect Rating Coding System (Webster-Stratton, Hollinsworth, & Rogers, 1991). It was revised from a Q-sort measure to specifically evaluate children's social skills and conflict management strategies. The coding system includes 18 items that form three factors: Aggression with Peer (six items), Inappropriate Play (eight items), and Positive Communication (four items). The Inappropriate Play factor was used for this negative child at school composite score because MOOSES observations captured aggressive interactions with peers but did not assess the quality of play. The Inappropriate Play summary score consisted of eight items (e.g., dyad was loud, physically active, impulsive, reckless, sexually inappropriate, had trouble keeping occupied). Internal consistency for the Inappropriate Play scale was .88, ICC = .71.

Child Social Competence With Peers Composite Score

This composite score includes two teacher-report variables (TASB prosocial and PCSC social acceptance), one classroom observation variable (SHP social contact), and one laboratory observation variable with peer (DPIS positive communication). Cronbach's α for composite score was .52.

TASB. This teacher-report measure (Cassidy & Asher, 1992) was described previously. The social acceptance score was used for this child social composite score, including three items (easy to make friends, has a lot of friends, is popular). Cronbach's $\alpha = .87$.

SHP. The SHP was described previously. The child social contact score was of interest for this composite score and included three items (initiates interactions with peers, plays with peers, and has social contact with others). Cronbach's $\alpha = .87$.

DPIS. The DPIS was also described previously. The positive communication variable was used for this composite score (four items: ask for information about friend, shares positive experiences, verbalized friendship, agrees with friend; Cronbach's $\alpha = .70$; ICC = .61).

Negative Classroom Management and Atmosphere Composite Score

A composite score for negative classroom management and atmosphere was computed for each teacher ($N = 157$). This composite score included five variables: total teacher criticism (MOOSES), an observation of classroom atmosphere, and three items from the Teacher Coder Impression Inventory (harsh discipline, nurturing, and percent time teacher inappropriate). In computing this composite, scales for positive variables were reversed so that high scores indicated worse outcomes. (Cronbach's α for this composite score was .84)

Classroom Atmosphere Measure. This 10-item questionnaire developed by Fast Track (Conduct Problems Prevention Research Group: CPPRG) is completed by school observers who rate general classroom factors such as overall disruptive behavior and student responsiveness to rules. Observers also code the teacher's responsiveness to student needs and support for student effort. This scale has shown good internal consistency (Cronbach's αs ranging from .94 to .95) and adequate interrater reliability (ICC = .55 to .70).

MOOSES. The MOOSES observation coding system was described earlier. This study used one teacher variable: (1) total critical statements to students during the 30-min observation (ICC = .90).

Teacher Coder Impressions Inventory. This is a measure of teacher behavior and teacher–child interactions in the classroom modeled after the CII. Three summary scores were used in the teacher composite scores: (a) harsh techniques (14 items, including teacher threats, criticisms, guilt induction, sarcasm, anger, physical aggression, and verbal aggression), $\alpha = .91$ and ICC = .71; (b) nurturing techniques (13 items, including paid attention when child talked, encouraged child to try something new, positive and reinforcing, verbally and physically affectionate), $\alpha = .87$ and ICC = .67; and (c) percentage of time teacher is inappropriate (single Likert-type item); ICC = .70.

Parent and Teacher Satisfaction With Program

Three to 4 weeks postintervention and at 1-year follow-up, parents and teachers completed a brief inventory rating the effectiveness of the leader, the group dynamics, and the videotape vignettes.

Results

Treatment effects for each measure were examined using six-group analysis of covariance (ANCOVA) with pretest scores as covariates for corresponding posttest scores. Next we conducted planned comparisons (on post scores adjusted for pretest scores) contrasting each treatment condition with the control condition. Then we examined whether TT added to parent training or child training by contrasting CT versus CT + TT and PT versus PT + TT. Lastly we examined whether the PT + CT + TT condition, which addressed three risk factors (child, parent, and school), produced benefits beyond those that addressed only two risk factors (CT + TT and PT + TT). We use experiment-wide

corrections in interpreting results because we used the conservative approach of composite scores, which reduced the number of comparisons for individual tests and because we had preplanned our comparisons. Effect sizes are included so that readers can evaluate the strength of the individual comparisons.

The analysis of variance (ANOVAs) and chi-square analysis for dichotomous variables revealed no significant differences among the conditions on the demographic or family background variables (i.e., marital status, education, income, social class, child's sex and age, percentage of children on psychostimulants). Neither were there were any significant differences between conditions at baseline for the composite scores. See Table 1 for demographics.

Intervention Effects: Short-Term Results

Negative and positive parenting. As noted in Table 2, the six-group ANCOVA revealed significant experimental effects for the mother negative parenting composite score, $F(5, 151) = 7.26$, $p < .001$; the father negative parenting composite score, $F(5, 108) = 6.65$, $p < .001$; the mother positive parenting composite score, $F(5, 151) = 3.29$, $p < .01$; and the father positive parenting composite score, $F(5, 110) = 2.37$, $p < .05$. For mother's negative parenting, all five of the treatment conditions showed significant treatment effects in the predicted direction compared with controls. Comparisons of the different treatments revealed no

Table 2. *Parenting Composite Scores Pre- and Posttreatment by Condition*

	Treatment Condition											
	PT		PT + TT		CT		CT + TT		PT + CT + TT		Control	
Composite Scores[a]	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Mother negative parenting[b]												
Pre	45.63	12.13	44.65	12.92	43.18	17.25	45.20	13.85	44.42	16.11	39.48	13.29
Post	29.35	14.24	27.30	12.23	34.38	14.26	34.84	14.94	29.01	11.77	43.12	16.06
Adjusted mean	28.53		26.91		34.63		34.21		28.72		45.00	
Father negative parenting[c]												
Pre	42.91	15.45	40.35	11.51	37.59	12.44	48.29	13.18	41.41	13.45	38.47	13.43
Post	33.08	15.50	23.26	9.32	35.38	13.42	41.00	16.01	27.09	11.43	39.85	11.63
Adjusted mean	32.34		23.87		37.46		37.40		27.14		41.46	
Mother positive parenting[d]												
Pre	59.22	13.42	65.33	13.08	60.62	12.67	59.34	12.38	61.05	9.56	58.14	11.66
Post	67.91	13.95	72.90	12.27	64.36	13.32	62.67	10.93	68.42	13.43	58.99	11.35
Adjusted mean	68.77		69.99		64.36		63.46		68.15		60.52	
Father positive parenting[e]												
Pre	48.64	20.02	63.57	11.97	59.39	10.33	47.23	16.81	60.32	11.60	53.88	11.61
Post	58.98	13.07	64.02	12.67	57.75	12.27	48.40	12.10	64.25	10.16	55.29	16.12
Adjusted mean	62.51		59.87		55.71		52.66		61.77		56.13	

	Two-Group Contrasts for Group by Time				
Analysis of Covariance	PT vs. Control	PT + TT vs. Control	CT vs. Control	CT + TT vs. Control	PT + CT + TT vs. Control
Mother negative parenting	–4.89***	–5.06***	–3.05**	–2.98**	–4.60***
Father negative parenting	–2.73**	–4.65***	*ns*	*ns*	–4.07***
Mother positive parenting	3.02**	3.23**	*ns*	*ns*	2.67**
Father positive parenting	1.98*	*ns*	*ns*	*ns*	*ns*

Note: PT = parent training alone; CT = child training alone; PT + TT = parent training plus teacher training; CT + TT = child training plus teacher training; PT + CT + TT = parent and child training combined with teacher training.

[a]Composite scores consist of parent self-reports and home observations of parenting. [b]PT $n = 31$; PT + TT $n = 24$; CT $n = 29$; CT + TT $n = 23$; PT + CT + TT $n = 25$; control $n = 26$. [c]PT $n = 22$; PT + TT $n = 14$; CT $n = 23$; CT + TT $n = 15$; PT + CT + TT $n = 18$; control $n = 23$. [d]PT $n = 30$; PT + TT $n = 24$; CT $n = 30$; CT + TT $n = 23$; PT + CT + TT $n = 25$; control $n = 26$. [e]PT $n = 23$; PT + TT $n = 15$; CT $n = 23$; CT + TT $n = 15$; PT + CT + TT $n = 18$; control $n = 23$.

$^{+}p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

significant differences for mother's negative parenting. For father's negative parenting, only the three treatment conditions that included PT showed significant treatment effects compared to controls. Comparisons of the different treatments revealed that fathers in the PT + TT group were significantly less negative than fathers in the PT-only condition, $t(108) = -2.22$, $p < .05$. Fathers in the PT + CT + TT condition were significantly less negative than fathers in the CT + TT condition, $t(108) = 2.61$, $p < .05$.

For the mother's positive parenting, the three treatment conditions that included parent training showed significant treatment effects in the predicted direction compared with controls, whereas the two conditions without PT were not significantly different than control. For fathers, only the PT-only condition showed a significant treatment effect compared to controls. There were no significant differences between the treatment conditions for mothers' positive parenting. Fathers in the PT + CT + TT condition were significantly more positive than fathers in the CT + TT condition, $t(108) = 2.33$, $p < .05$; $t(108) = 2.61$, $p < .05$. Because few of the contrasts comparing the five treatment conditions were significant, in the interest of space, these contrasts are not shown on the tables. Statistics for significant between-treatment condition contrasts are all reported in the text. See Table 2 for parenting results.

Child conduct problems at home. As noted in Table 3, the six-group ANCOVA revealed significant effects in the predicted direction for children with their

Table 3. *Child Composite Scores Pre- and Posttreatment by Condition*

	Treatment Condition											
	PT		PT + TT		CT		CT + TT		PT + CT + TT		Control	
Composite Scores[a]	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Child conduct problems at home/Mother[b]												
Pre	48.39	13.43	46.56	9.57	45.07	9.60	46.83	8.56	50.98	15.43	45.26	10.15
Post	36.40	11.47	39.76	12.22	39.42	12.19	37.13	9.83	38.37	10.46	46.59	9.79
Adjusted mean	35.96		39.99		40.19		37.25		36.99		47.28	
Child conduct problems at home /Father[c]												
Pre	45.38	11.39	44.30	11.37	41.18	8.58	46.98	11.37	44.90	14.26	43.87	8.27
Post	36.09	10.02	36.14	7.45	39.39	8.64	39.66	10.15	35.41	11.77	44.11	6.62
Adjusted mean	35.84		36.17		40.23		39.01		35.29		44.26	
Child social competence with peers[d]												
Pre	47.19	16.98	41.70	14.54	46.56	13.16	38.86	12.85	42.99	13.24	47.51	13.67
Post	48.19	15.38	47.41	14.81	51.66	14.85	45.98	14.20	52.37	12.77	46.42	15.41
Adjusted mean	46.12		49.05		50.02		49.55		53.15		44.13	
Child conduct problems at school[e]												
Pre	31.86	16.68	49.8	16.01	36.42	17.60	41.50	15.41	42.28	21.30	31.31	15.73
Post	28.35	14.42	37.56	16.32	30.78	14.73	34.04	15.44	31.60	14.23	35.8	18.69
Adjusted mean	32.50		31.06		32.23		32.49		29.58		39.55	

	Two-Group contrasts for Group by Time				
	PT vs. Control	PT + TT vs. Control	CT vs. Control	CT + TT vs. Control	PT + CT + TT vs. Control
Child conduct problems at home—mother	–4.11***	–2.50*	–2.55*	–3.39**	–3.52**
Child conduct problems at home—father	–3.20**	–2.71**	*ns*	–1.79^{+}	–3.23**
Child social competence with peers	*ns*	*ns*	1.98*	1.68^{+}	2.89**
Child conduct problems at school	–2.06*	–2.40*	–2.28*	–2.04*	–2.93**

Note: PT = parent training alone; CT = child training alone; PT + TT = parent training plus teacher training; CT + TT = child training plus teacher training; PT + CT + TT = parent and child training combined with teacher training.

[a]Composite scores consist of parent self-reports and home observations of parenting. [b]PT $n = 31$; PT + TT $n = 24$; CT $n = 29$; CT + TT $n = 23$; PT + CT + TT $n = 25$; Control $n = 26$. [c]PT $n = 22$; PT + TT $n = 14$; CT $n = 23$; CT + TT $n = 15$; PT + CT + TT $n = 18$; Control $n = 23$. [d]PT $n = 30$; PT + TT $n = 23$; CT $n = 30$; CT + TT $n = 23$; PT + CT + TT $n = 25$; Control $n = 26$. [e]PT $n = 30$; PT + TT $n = 24$; CT $n = 30$; CT + TT $n = 23$; PT + CT + TT $n = 25$; Control $n = 26$.

$^{+}p < .10$. $*p < .05$. $**p < .01$. $***p < .001$.

mothers, $F(5, 151) = 4.18$, $p < .01$, and fathers, $F(5, 108) = 3.29$, $p < .01$. All five treatment groups showed significant treatment effects for child negative behavior at home with mothers compared with control children. For children's negative behavior with fathers, only the three conditions with parent training resulted in significant treatment effects compared to controls. Comparisons of the different treatments revealed no significant differences for child behavior with mother or fathers.

Child conduct problems at school and with peers. The six-group ANCOVA was nonsignificant for the child negative problems at school composite score. However, preplanned comparisons indicated that all five of the treatment conditions showed significant treatment effects in the expected direction on this variable compared with controls. There were no differential effects of treatment conditions.

Child social competence with peers. The six-group ANCOVA was nonsignificant for the child social competence composite score. Planned comparisons indicated that the three treatment conditions that included CT showed significant treatment effects in the predicted direction compared with controls. Comparisons of the different treatments revealed no differences between conditions. See Table 3 for child outcome results.

Teacher classroom management. The ANCOVA revealed significant group effects for the teacher classroom management composite score, $F(5, 151) = 5.39$, $p < .001$. The three conditions that received TT as well as the CT-only condition showed significant treatment effects compared to control. The PT-only condition showed no significant effects compared to control. Comparisons of the treatments revealed a significant effect for the PT versus PT + TT comparison in the expected direction. There were no significant effects for other between-treatment comparisons. See Table 4 for teacher results.

Clinical Significance

These comparisons between treatment and control groups suggest that all the intervention approaches produced significant improvements in parent, teacher, and child behavior compared with controls. Yet a major concern is the extent to which the treatment produced clinically important changes in the children (Schmaling & Jacobson, 1987). We used several conservative criteria to assess the clinical significance of the findings. For child behavior at home, we assessed clinical significance on a parent-report variable (the ECBI) and an observational variable (DPICS total deviance). A child was considered to have made a clinically significant improvement on the ECBI if his or her intensity score moved from being above the clinical cutoff intensity score at baseline (>142) to below 142 at postassessment (74% of the sample scored above 142 at baseline). If the child's baseline score was below the threshold, then it was not included in the analyses. For the DPICS total deviance variable, clinical significance was measured by a 30% reduction in negative behavior (if less than 1 every 3 min at baseline). Fifty-two percent of the sample was above this cutoff at baseline. For child aggressive behavior at school, we used one teacher-report variable (the TASB). This measure also does not provide norms or cutoffs, so we included the child in the analyses if he or

Table 4. *Teacher Composite Scores Pre- and Posttreatment by Condition*

Composite Scores[a]	Treatment Condition											
	PT		PT + TT		CT		CT + TT		PT + CT + TT		Control	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Teacher negative												
Pre	23.31	14.00	25.77	10.70	23.07	13.25	20.10	10.86	22.75	9.62	23.13	13.79
Post	23.48	12.78	14.82	7.71	18.78	14.47	14.70	9.03	14.44	7.11	24.12	13.87
Adjusted mean	23.34		13.50		18.75		16.10		14.57		24.07	

	Two-Group contrasts for Group by Time				
	PT vs. Control	PT + TT vs. Control	CT vs. Control	CT + TT vs. Control	PT + CT + TT vs. Control
Teacher negative	*ns*	–3.77***	–2.01*	–2.81**	3.43***

Note: PT = parent training alone; CT = child training alone; PT + TT = parent training plus teacher training; CT + TT = child training plus teacher training; PT + CT + TT = parent and child training combined with teacher training. $n = 30$; PT + TT $n = 24$; CT $n = 30$; CT + TT $n = 23$; PT + CT + TT $n = 25$; control $n = 26$.

[a]Composite scores consist of parent self-reports and home observations of parenting.

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

she was above our sample mean at pretest (57% fell above the mean at pretest) and considered a 20% reduction a clinically significant improvement (in our sample this corresponds to approximately .5 *SD* reduction in aggression).

We also used a classroom observational variable (total observed negative behavior to peers and teachers). For this variable we required a 30% decrease in negative behavior for any child who exhibited four or more negative behaviors at baseline (51% of the sample showed four or more negative behaviors at baseline). We based these percentage reductions for outcome on the measures that did not have normative data on previous studies with children with conduct problem, which reported 20% to 30% reductions as indicators of treatment success (Dumas & Wahler, 1983; Webster-Stratton & Hammond, 1997). Both behavioral and parent- and teacher-report criteria were chosen to avoid reliance on a single informant or criterion measure and to provide validity to the findings.

Conduct problems at home. On the mother-report ECBI intensity scores, two of the five treatment conditions showed clinically significant improvement compared to control. In the PT + TT condition, 84.6% of the children improved significantly compared to 40% of control children, $\chi^2(1, N = 33) = 6.42$, $p < .01$. In the CT + TT condition 81.3% of the children improved compared to controls, $\chi^2(1, N = 36) = 6.22$, $p < .01$. The comparison of PT versus PT + TT showed that the addition of TT significantly improved mother reports of problems, $\chi^2(1, N = 34) = 5.78$, $p < .01$. On the DPICS observational variable for child negative behavior, three treatment conditions showed clinically significant improvements compared to controls (PT, 72.2%; PT + TT, 85%; CT, 82%; CT + TT, 69.2%; control, 36%). Chi-square analyses for each condition compared to control are as follows: PT, $\chi^2(1, N = 32) = 4.26$, $p < .04$; PT + TT, $\chi^2(1, N = 27) = 6.81$, $p < .01$; CT, $\chi^2(1, N = 25) = 5.31$, $p < .02$. See Table 5 for results of clinical significance tests.

Conduct problems at school. According to the teacher report (TASB), all five treatment conditions showed clinically significant improvements compared to control. Chi-square analyses for each condition compared to control are as follows: PT, $\chi^2(1, N = 27) = 9.40$, $p < .002$; PT + TT, $\chi^2(1, N = 30) = 5.62$, $p < .02$; CT, $\chi^2(1, N = 29) = 11.02$, $p < .001$; CT + TT, $\chi^2(1, N = 23) = 4.10$, $p < .04$; PT + CT + TT, $\chi^2(1, N = 25) = 7.67$, $p < .006$. On classroom observations of children's negative behavior, all five treatment conditions also showed clinically significant reductions in aggressive behavior compared to control. Chi-square analyses for

Table 5. *Clinical Significance: Percentage of Children Showing Clinically Significant Improvements at Posttreatment and Follow-Up*

	PT %	PT + TT %	CT %	CT + TT %	PT + CT + TT %	CONTROL %	Significant Contrasts
Posttreatment[a]							
Child conduct problems at home							
Mother report (ECBI)[b]	42.9	84.6*	63.2+	81.3*	65.2+	40.0	PT + TT > PT*
Home observations (DPICS)[c]	72.2*	85.0*	82.0*	69.2*	66.7*	36.0	CT > PT*
Child conduct problems in classroom							
Teacher report, aggression (TASB)[d]	66.7*	50.0*	70.6*	45.5*	61.5*	8.3	—
Classroom observations (MOOSES)[e]	53.8*	60.0*	70.0*	83.3*	75.0*	20.0	—
Follow-up[f]							
Child conduct problems at home							
Mother report (ECBI)[b]	42.9	84.6	66.7	72.7	80.0	NA	PT + TT > PT*
Home observations (DPICS)[c]	47.1	54.5	100.0	83.3	80.0	NA	CT > PT**
Child conduct problems in classroom							
Teacher report, aggression (TASB)[d]	57.1	42.9	75.0	36.4	45.5	NA	CT > PT + CT + TT*
Classroom observations (MOOSES)[e]	83.3	70.6	70.0	83.3	72.7	NA	—

Note: PT = parent training alone; CT = child training alone; PT + TT = parent training plus teacher training; CT + TT = child training plus teacher training; PT + CT + TT = parent and child training combined with teacher training; ECBI = Eyberg Child Behavior Inventory; DPICS = Dyadic Parent–Child Interactive Coding System–Revised; TASB = Teacher Assessment of School Behavior; MOOSES = classroom observation coding system.

each condition compared to control are as follows: PT, $\chi^2(1, N = 23) = 2.72$, $p < .01$; PT + TT, $\chi^2(1, N = 30) = 4.29$, $p < .04$; CT, $\chi^2(1, N = 20) = 5.05$, $p < .03$; CT + TT, $\chi^2(1, N = 22) = 8.82$, $p < .003$; PT + CT + TT, $\chi^2(1, N = 26) = 7.49$, $p < .006$.

Consumer satisfaction. Consumer satisfaction with the parent, child, and teacher programs was high. The average parent rating of overall treatment satisfaction was greater than 6 on a 7-point scale in which 7 = *very positive*. Parents' ratings of treatment showed satisfaction ratings ranging from 5.86, *SD* = 1.18 (CT only) to 6.63, *SD* = .65 (PT + CT + TT). We comprised an overall satisfaction summary score that consisted of 11 items, including treated problems are improved, feelings about child's problems, expectation for good results, recommend program to others, and confidence in managing current and future problems. Although means for this satisfaction summary score were high for parents in all treatment conditions (all ratings averaged above 5 on the 7-point scale), there were significant differences between the treatment conditions. For mothers, the overall five-group ANOVA was significant, $F(4, 121) = 7.16$, $p < .001$. Comparisons of the treatment conditions indicated that the CT-only condition was rated significantly lower by mothers than the other four conditions. For fathers, the overall five-group ANOVA was significant, $F(4, 83) = 4.20$, $p < .01$. Comparisons of the treatment conditions with each other indicated that the CT + TT and CT treatments were rated significantly lower than PT + TT. Interestingly, when asked whether parents wanted additional therapy at the end of the year, significantly more of the parents in the single-component treatments (PT, CT, and CT + TT) requested additional therapy (62.1%, 66.7%, and 63.6%, respectively) compared with the other treatments that included PT and TT (31.8% and 25%, respectively).

Teachers reported on their satisfaction following each day of training. Averaging across the four sessions, 93.5% of the teachers reported that the content was helpful, 87.8% reported that the quality of the teaching was good, and 75.1% rated that the training would be very useful in their work. Teachers of children in all of the treatment conditions completed a questionnaire asking how successful the intervention was for the target child (e.g., did the child's behavior improve, was the treatment appropriate, would they recommend the program to others, overall evaluation of the treatment). Although all ratings were high (all means, on a 7-point scale, were more than 5 in all treatment groups), the program was consistently rated higher for conditions where teachers received training.

Effect sizes. Another means of measuring the impact of the different treatment combinations is to look at the effect sizes of each treatment condition compared to control and the number of domains that showed treatment effects for each treatment combination. The effect size statistic reported here is Cohen's *d*. For this statistic, .20 is considered a small effect, .50 is a moderate effect, and .80 is a large effect (Cohen, 1997). Table 6 shows that although all treatments affected certain domains, the CT and CT + TT conditions brought about significant change in about half of the domains, PT and PT + TT conditions showed change in seven of nine domains, and PT + CT + TT showed change in eight of nine domains. Furthermore, although the effects of the CT and CT + TT treatments on mothers' negative parenting were significant, they were about half the size of those found in the conditions with PT. Similarly, although CT alone produced a significant change in teachers' negative behavior, the magnitude of this effect is smaller than those found in the conditions that included TT. Although the PT + CT + TT condition showed few additive benefits compared to other treatment conditions, its effects for each domain were consistent with the strongest effects for that individual domain. In addition, this condition had significant effects in the greatest number of domains.

Table 6. *Effect Size (Cohen's d) for Significant Findings Across Outcome Domains for Each Treatment Group Compared to Control*

Composite Domains	PT vs. Control	PT + TT vs. Control	CT vs. Control	CT + TT vs. Control	PT + CT + TT vs. Control
Mother negative parenting	.81	.84	.51	.51	.74
Father negative parenting	.51	.91			.77
Mother positive parenting	.51	.51			.46
Father positive parenting	.35				
Child negative at home—mother	.67	.41	.41	.55	.57
Child negative at home—father	.63	.51		.35	.63
Child positive with peers			.35	.29	.46
Child negative at school	.35	.41	.41	.41	.46
Teacher negative		.63	.35	.46	.55
Summary of significance	7 of 9	7 of 9	5 of 9	4 of 9	8 of 9

Note: PT = parent training alone; CT = child training alone; PT + TT = parent training plus teacher training; CT + TT = child training plus teacher training; PT + CT + TT = parent and child training combined with teacher training.

Intervention Effects: 1-Year Follow-Up Results

Because the control group was treated after the postassessments, we could assess only whether children in the treatment conditions changed from postassessment to the 1-year follow-up. Mixed design (Time × Condition) ANOVAs were computed for each composite score from post to follow-up. For seven of the eight composite scores, the results were nonsignificant, indicating no change (maintenance of effects) from post to follow-up. The Condition × Time interaction was significant for the child negative at school composite, $F(4, 118) = 3.45$, $p = .01$. Paired t tests comparing the post to the follow-up scores for each condition indicated that the school behavior of children in the PT + CT + TT deteriorated from post to the follow-up. See Table 7 for 1-year follow-up results.

Clinical Significance at Follow-Up

Conduct problems at home. On the mother-report ECBI intensity scores, the clinically significant improvements noted at postassessment for the PT + TT and the CT + TT conditions were maintained. The comparison of PT to PT + TT showed that more children in the PT + TT condition showed clinically significant improvements than in the PT-only condition, $\chi^2(1, N = 27) = 5.04$, $p < .02$. The DPICS observational variable of child negative behavior at home showed interesting follow-up results. All three conditions that included CT showed marked improvement (of nearly 20 percentage points) from postassessment to the 1-year follow-up. On the other hand, the PT and PT + TT conditions showed some relapse over time.

Conduct problems at school. According to the children's new teachers at 1-year follow-up (TASB), there were slight decreases in the percentage of children showing clinically significant effects in all conditions except for the CT-only group. On classroom observations of children's negative behavior, all five treatment conditions continued to show clinically significant reductions in aggressive behavior. PT and PT + TT conditions showed continued improvements in

Table 7. *Composite Scores at Follow-Up Treatment by Condition*

	Treatment Condition									
	PT		PT + TT		CT		CT + TT		PT + CT + TT	
Composite Scores[a]	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Mother negative parenting[b]										
Follow-up	33.35	15.87	29.21	14.84	31.06	16.10	34.09	12.98	34.53	14.30
Adjusted mean	33.97		31.77		28.19		32.84		35.47	
Father negative parenting[c]										
Follow-up	32.78	15.81	26.81	14.83	28.85	14.62	36.50	17.58	30.36	13.64
Adjusted mean	31.54		32.16		26.19		32.36		33.70	
Mother positive parenting[d]										
Follow-up	66.07	11.27	71.21	10.57	64.75	16.63	62.78	12.32	67.67	12.48
Adjusted mean	65.69		67.66		66.55		64.89		67.82	
Father positive parenting[e]										
Follow-up	61.04	11.97	67.18	14.93	59.00	11.08	50.30	13.24	66.60	14.33
Adjusted mean	60.78		62.37		58.81		56.30		62.62	
Child conduct problems at home/Mother[b]										
Follow-up	36.74	12.29	38.40	12.70	34.77	11.72	37.95	12.02	36.52	9.44
Adjusted mean	37.27		38.07		34.16		38.70		36.17	
Child conduct problems at home/Father[c]										
Follow-up	35.12	8.88	34.94	13.03	32.90	10.25	35.86	15.51	32.54	8.88
Adjusted mean	35.39		36.27		31.83		35.15		33.89	
Child social competence with peers[f]										
Follow-up	50.62	17.73	50.06	11.50	6.02	17.47	46.06	20.33	45.40	15.07
Adjusted mean	51.05		51.46		54.65		47.67		42.32	
Child conduct problems at school[g]										
Follow-up	28.56	16.26	30.32	15.46	32.70	14.93	37.55	21.07	39.76	20.86
Adjusted mean	31.77		26.40		33.46		36.46		40.78	

Note: PT = parent training alone; CT = child training alone; PT + TT = parent training plus teacher training; CT + TT = child training plus teacher training; PT + CT + TT = parent and child training combined with teacher training.

[a]Composite scores consist of parent self-reports and home observations of parenting. [b]PT $n = 30$; PT + TT $n = 22$; CT $n = 27$; CT + TT $n = 20$; PT + CT + TT $n = 22$. [c]PT $n = 21$; PT + TT $n = 14$; CT $n = 21$; CT + TT $n = 13$; PT + CT + TT $n = 16$. [d]PT $n = 29$; PT + TT $n = 22$; CT $n = 28$; CT + TT $n = 21$; PT + CT + TT $n = 24$. [e]PT $n = 23$; PT + TT $n = 14$; CT $n = 21$; CT + TT $n = 13$; PT + CT + TT $n = 17$. [f]PT $n = 27$; PT + TT $n = 21$; CT $n = 28$; CT + TT $n = 23$; PT + CT + TT $n = 21$. [g]PT $n = 29$; PT + TT $n = 21$; CT $n = 28$; CT + TT $n = 23$; PT + CT + TT $n = 23$.

school observations from postassessment to follow-up, making their improvements similar to the other conditions.

Discussion

Risk factors in three primary domains (parent, child, and classroom–teacher) contribute to the development of conduct problems in young children. The purpose of this study was to evaluate the additive effects of treatment delivered in two or more risk domains versus treatment delivered in only one domain (CT or PT). First, we expected specificity in the treatment outcomes depending on the risk factor or combination of risk factors addressed by the treatments. In other words, we expected conditions that contained parent training would result in change in the parent and child at home but would not necessarily affect children's behavior with teachers or peers. Similarly we expected that the CT conditions would impact children's behavior with peers but would not necessarily change parent behavior. In particular, we were interested in determining whether the Incredible Years teacher training intervention enhanced our previously empirically validated parent and child training treatments by producing stronger outcomes in the classroom. Inconsistent and negative teacher, as well as parent, interactions with children are considered proximal links in the chain leading to the escalation of conduct problems, academic failure, and later development of delinquency and substance abuse (Hawkins, Catalano, & Miller, 1992). We hypothesized that by strengthening teachers' use of positive classroom management strategies and collaboration with parents, we would significantly enhance effects of the parent and the child treatments on children's behavior in the classroom. We expected that increasing the cross-setting consistency in parent and teacher responses to children's misbehavior and the attention to school as well as home risk factors, and that working directly with the children to increase their social competence, would strengthen treatment response. We also hypothesized that treatment delivered in two or more risk domains for conduct problems would produce stronger, longer term, and more generalized results than treatments delivered in only one risk domain (i.e., PT or CT).

The results only partially confirmed the study's hypotheses in terms of specificity of treatment effects. (See Table 6 for effect sizes of each treatment in each domain.) The short-term results indicated that the three conditions that included PT components (PT, PT + TT, PT + TT + CT) showed large positive effects on mothers' and fathers' harsh or negative parenting style compared to control parents. Moderate treatment effects were found for mother's positive parenting style in all three PT conditions (effects on fathers' positive parenting were found only in the PT condition). This replicated earlier findings with this treatment program in terms of parenting improvements (Webster-Stratton, 1994a). Additionally, these three PT conditions showed moderate positive effects on child negative behaviors at home with both mothers and fathers compared to controls. Surprisingly, however, the CT and CT + TT treatment conditions also resulted in significant (but somewhat weaker) reductions in mothers' (but not fathers') harsh or negative parenting behaviors and improvements in child negative behaviors with mothers at home compared with controls. Thus, it appears that the CT and CT + TT interventions generalize across settings to improvements in coercive mother–child dyadic relationships at home. Perhaps when children's negative behaviors decrease as a result of CT and CT + TT, this results in mothers responding by being less critical. In other words, the coercive cycle is interrupted.

As predicted, conditions that included teacher training (PT + TT and CT + TT and PT + TT + CT) showed significant effects on teacher behavior compared with controls, confirming that the teacher training was effective in changing teacher interactions with the target students as well as in general classroom management strategies with all students. Surprisingly, the CT-only condition also showed small positive effects on teacher behavior, suggesting again that improvements in child behavior lead to improved teacher interactions even without direct intervention with the teacher. As predicted, children's negative behavior in the classroom improved in the conditions with TT compared to controls. However, similar effects were also found for the CT-only and PT-only conditions, indicating that reductions in children's aggressive behavior and increases in compliance and emotion regulation brought about by the CT and PT treatments generalized to the school setting without direct teacher intervention. This set of results speaks to the strength of the CT and PT training for changing children's behavior in the school setting and for its unexpected impact on teacher behavior. These are similar to the results found for effects of CT on mother–child coercion. As expected, only the conditions that included child training showed significant effects on children's social competence. It seems that direct instruction with the children is necessary for learning the skills needed for the replacement of negative behaviors with prosocial interactions with their peers.

At the 1-year follow-up, effects for seven of the eight composites scores showed no change, indicating maintenance of positive and negative parenting behaviors, child negative at home, and child positive with peers results found at post. On the child negative at school variable, there was a significant deterioration in children's negative behavior in the classroom from post to follow-up in the CT + PT + TT group. Analyses

of the clinical significance of the results again indicated that the significant clinical treatment effects noted at the postassessment were maintained at the 1-year follow-up. In fact, observations of children's negative school behavior showed that children in all treatment conditions were doing very well at the follow-up (70% to 80% showed clinically significant improvement 1 year later). However, observations of child negative behavior at home suggested that the three conditions that included CT continued to improve over time (increases of approximately 15 to 20 percentage points), whereas the conditions without CT (PT and PT + TT) actually showed deterioration. These data suggest that working directly with the children has added benefits in terms of maintaining effects over time. Perhaps the CT program's effect in improving the child's behavior at home serves to maintain the parents' positive interactions, thus creating a positive ripple effect for the long term.

Another aim of the study was to examine the differential and additive treatment effects of the parent, child, and teacher training when offered in different combinations. We expected teacher training would enhance children's school outcomes and that treatment effects would increase as treatment components were added (e.g., PT < PT + TT < PT + CT + TT). The results related to these questions were less clear and somewhat unexpected. It is perplexing that the combination of PT + CT + TT did not produce significant additive effects when compared with treatments delivered in the single and dual risk domain treatments. In addition, there were few significant additive effects of TT to the PT and CT combinations. In fact, only two significant additive effects of TT were reported: Teacher training added to the clinical significance of mother reports on the ECBI, and consumer satisfaction scores were higher for conditions with more treatment components. In addition, PT added significantly to CT + TT in the domains of fathers' negative and positive parenting. Given that each treatment combination produced substantial changes in many of the domains measured, however, it was difficult to find statistically significant additive effects for the between-condition comparisons. Somewhat surprisingly, our single-factor treatments (PT or CT alone) fared well in the child negative behavior at school domain. This is contrary to our previous findings (Webster-Stratton & Hammond, 1997) that suggested that when we worked with parents or children alone, the results did not always generalize to the school setting. The CT and PT treatments in this study focused somewhat more on positive peer relationships. In the CT condition, we spent time on coaching children in specific prosocial skills while they were engaged in peer interactions with other children in the groups. In the parent groups, we taught parents to do this coaching with their child and his or her friends at home. This may have generalized to the school setting and helped reduce children's negative behaviors in the school setting. Although we are extremely encouraged by the impact of these treatments on child behavior at school, the strength of these effects with the single treatments makes it difficult to find statistically significant additive effects when TT was added.

In terms of the effect size and number of significant outcomes, results indicated some advantage in offering PT over CT, and a slight advantage to the combination of PT + CT + TT over the other treatment conditions. It is important to notice, however, which domains were influenced by the different treatment combinations. It is clear that conditions that included PT had the most impact on parent behavior, conditions with CT had the most impact on child prosocial behavior with peers, and all treatment conditions seemed to reduce child negative behavior. Although this study did not address directly the question of matching treatment to children, it suggests there may be benefit in tailoring interventions based on the child's presenting problem as well as the skill of the parents and teachers. Clearly, for children who are experiencing difficulty primarily at home, PT would be the key treatment component. CT would be an important addition if children are also experiencing difficulties with peers, and the addition of TT should be considered if children are experiencing difficulty in school, particularly if the parent–teacher–child relationships are negative. As a single treatment, PT seems to have an impact in the most domains but does not address the important issue of child–peer relationships. If parents cannot be involved in training for some reason, it is encouraging that CT will produce changes in child behavior at home and in the classroom and also improves behavior with peers.

Treatment conditions that include teacher training clearly change teachers' behavior in relation to these children with conduct problems, as well as strengthen general classroom management skills. Many of the parents who brought their children to our clinic initially reported extremely adverse relationships with their children's schools and teachers. Our consumer satisfaction data show that parents and teachers are more satisfied with outcomes when teachers are also involved in the training. It is important to note that in this study the treatment lasted only 1 year. This means that although parents and children were measured at pre, post, and 1-year follow-up, the trained teachers are only involved for the pre- and postassessments. Children then moved to the next grade level with untrained teachers. The 1-year follow-up assessment occurs with these new teachers. It is possible that for any additive benefits of teacher training to be evident, teachers would need to be trained across multiple years. After all, parents and children involved in the treatment presumably carried forward skills they had learned into the subsequent years. The teachers we

trained were not given the opportunity to do this with the children involved in this study.

Given the research that links child aggressive classroom behavior and ineffective teacher classroom management skills to academic underachievement and later development of antisocial behavior (e.g., Kellam et al., 1998), the teacher training program is promising in its ability to halt coercive processes and bring about positive change in teacher behavior and classroom atmosphere. The high rates of teacher attendance at the trainings and the high satisfaction ratings indicated that teachers found this material relevant, helpful, and worthwhile. Because this project did not include a TT-only condition, it is not known which domains measured in this study would be impacted by this condition without the added PT or CT. The TT program is the least costly of the treatment approaches used in this study and would seem to be a cost-effective endeavor because teachers can be trained in groups and are likely to impact several students with conduct problems in any given year.

One limitation of the study is that the sample was primarily Euro-American, and although participating families represented the whole range of income levels, the majority of families were two-parent, middle-income families. We have promising data, however, from diverse Head Start samples (70% non-Euro-American families), showing that the parent and teacher programs have similar effects with Head Start teachers and low-income, minority parents whose children are enrolled in Head Start (Webster-Stratton, 1998; Webster-Stratton, Reid, et al., 2001).

A second limitation is that we no longer had an untreated control group at our 1-year follow-up assessments. For ethical reasons we offered treatment to the control participants after the postassessments were completed. Other longitudinal studies of untreated samples of aggressive children indicate that without intervention many of these children will continue on the trajectory to conduct disorder, delinquency, and violence (Loeber & Farrington, 2000). Thus, although we cannot compare the follow-up sample to an untreated control, we are encouraged by the findings that intervention children's behavior improved with treatment and remained stable from the postassessment to the 1-year follow-up.

Finally, a third limitation of the study is the small sample size per treatment condition limiting the statistical power. The sample size, although consistent with existing treatment research, makes it difficult to have enough power to find significant differences between conditions, particularly between treatments that have moderate to large effect sizes to begin with. Nonetheless, the preponderance of the evidence from this study with conservative analyses using composite scores suggests the wisdom of combining PT with either CT or TT to strengthen generalization but does not suggest that using three interventions will be incrementally better than using two.

In summary, the study's findings suggest the utility of using treatments that strengthen protective factors (parenting competence, children's social skills, home–school involvement, and a positive classroom environment) as a strategy for preventing and reducing conduct problems. Each of the treatments led to expected changes (i.e., PT improved parent behavior, CT improved peer social skills and children's behavior in the classroom, and TT improved teacher behavior). In addition, we found spillover effects, particularly for the CT group (i.e., there were positive effects in the behaviors of parents and teachers of children who received CT only). Based on this study, it seems that combining PT with either CT or TT may be the most potent treatment for children with pervasive behavior problems.

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