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Preventing Conduct Problems, Promoting Social Competence: A Parent and Teacher Training Partnership in Head Start

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Studied the effectiveness of parent and teacher training as a selective prevention program for 272 Head Start mothers and their 4-year-old children and 61 Head Start teachers. Fourteen Head Start centers (34 classrooms) were randomly assigned to (a) an experimental condition in which parents, teachers, and family service workers participated in the prevention program (Incredible Years) or (b) a control condition consisting of the regular Head Start program. Assessments included teacher and parent reports of child behavior and independent observations at home and at school. Construct scores combining observational and report data were calculated for negative and positive parenting style, parent–teacher bonding, child conduct problems at home and at school, and teacher classroom management style. Following the 12-session weekly program, experimental mothers had significantly lower negative parenting and significantly higher positive parenting scores than control mothers. Parent–teacher bonding was significantly higher for experimental than for control mothers. Experimental children showed significantly fewer conduct problems at school than control children. Children of mothers who attended 6 or more intervention sessions showed significantly fewer conduct problems at home than control children. Children who were the "highest risk" at baseline (high rates of noncompliant and aggressive behavior) showed more clinically significant reductions in these behaviors than high-risk control children. After training, experimental teachers showed significantly better classroom management skills than control teachers. One year later the experimental effects were maintained for parents who attended more than 6 groups. The clinically significant reductions in behavior problems for the highest risk experimental children were also maintained. Implications of this prevention program as a strategy for reducing risk factors leading to delinquency by promoting social competence, school readiness, and reducing conduct problems are discussed.

The incidence of aggression in children is escalating—and at younger ages (Hawkins, Catalano, & Miller, 1992). Studies indicate that anywhere from 7% to 20 % of children meet the diagnostic criteria for oppositional defiant disorder (ODD) or conduct disorder (CD). These rates may be as high as 35% for low-income welfare families (Webster-Stratton & Hammond, 1998). Research on the prevention of CDs has been identified as one of the nation's highest priorities (National Institute of Mental Health, 1996). This agenda is vitally important because of the increasingly high costs associated with widespread occurrence of delinquency, substance abuse, and escalating adolescent violence (Kazdin, 1985). Emergence of "early onset" ODD/CD in preschool children (high rates of oppositional defiant, aggressive, and noncompliant behaviors) is stable over time and appears to be the single most important behavioral risk factor related to antisocial behavior for boys and girls in adolescence (Moffitt, 1993; Yoshikawa, 1994). Such behavior has repeatedly been found to predict the development of drug abuse in adolescence (Dishion & Ray, 1991) as well as juvenile delinquency, depression, violent behavior, and school

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dropout (Kazdin, 1985). Moreover, because CD becomes increasingly resistant to change over time, prevention efforts should start during the preschool years. Unfortunately, recent projections suggest that fewer than 10% of the children who need services for ODD/CD actually receive them (Kazdin & Kendall, 1998). Less than half of those receive "empirically validated" interventions (Chambless & Hollon, 1998).

Head Start, which enrolls over 800,000 children in the United States each year, is an ideal context for implementing empirically validated mental health prevention and early intervention programs. The reason for targeting this socioeconomically disadvantaged population is that family, parenting, and child risk factors related to CDs are present at high rates (Offord, 1987; Webster-Stratton & Hammond, 1998). In fact, in a recent Head Start study in the Northwest region, we reported (Webster-Stratton & Hammond, 1998) that 35% of these families had three or more major family risk factors (e.g., single parenthood, poverty, depression, life stress, psychiatric illness, parent history of drug abuse, child abuse, spouse abuse) and that 40% to 45% of the Head Start mothers displayed high rates of harsh or physically negative discipline, another key risk factor in the development of children's conduct problems. Recent studies have also indicated rates of ODD or attention deficit disorders (attention deficit hyperactivity disorder [ADHD]), as high as 35%, high rates of aggression, and poor preliteracy skills in Head Start populations (Jones Harden et al., 2000; Offord, Boyle, & Szatmari, 1987; Webster-Stratton & Hammond, 1998).

Not surprisingly, assistance with children's challenging behaviors is the largest training need identified by Head Start administrators and teachers (Busecmi, Thomas, & Deluca, 1996; Yoshikawa & Zigler, 2000). Moreover, less than 50% of Head Start teachers have college degrees (associate, bachelor, or graduate) in child development, education, or related fields and very few have had training in behavior management or ways to promote social and emotional competence (Scott & Nelson, 1999). The importance of teacher training is emphasized by the clear consensus among child development experts (Bear, Webster-Stratton, Furlong, & Rhee, 2000) that the essence of a successful preschool resides in the quality of the child–teacher relationship and the abilities of teachers to provide a positive, consistent, and responsive environment. Aspects of the school setting, particularly teacher behaviors, are documented risk factors for ODD/CD. Improved classroom behavior is associated with high levels of praise and social reinforcement (Walker, Colvin, & Ramsey, 1995); the use of proactive teaching strategies (Hawkins, Von Cleve, & Catalano, 1991); the effective use of clear commands, warnings, reminders, and distractions (Abramowitz, O'Leary, & Futtersak, 1988); the use of tangible reinforcement systems (Pfiffner, Rosen, & O'Leary, 1985); team-based rewards (Kellam, Ling, Merisca, Brown, & Ialongon, 1998); mild but consistent response costs (time out or loss of privileges) for aggressive or disruptive behavior (Pfiffner & O'Leary, 1987); and direct instruction in problem-solving skills (Shure & Spivack, 1982). Rutter and colleagues (Rutter, Tizard, Yule, Graham, & Whitmore, 1976) also found that deficits in teachers' availability and use of praise and high teacher–student ratio were related to oppositional behaviors, delinquency, and academic performance. Field (1991) showed that children who attend high quality preschool centers with well-trained teachers are less aggressive in grade school. In a recent national survey, Phillips and colleagues (Phillips, Voran, Kisker, Howes, & Whitebrook, 1994) reported that teachers serving predominately low-income children were significantly more "harsh," "detached," and "insensitive" than teachers serving middle- and upper-income children. Sadly, consistent and positive classroom experiences may be the least available for the children who are most at risk.

Finally, although parent education is an important mission of Head Start, few programs have placed an emphasis on the use of comprehensive empirically validated parenting programs to help promote children's social competence and reduce behavior problems. Head Start family service providers have had little formal training in implementing such programs or in running parent groups. Leaders in the field are calling for validated intervention and prevention efforts with teachers and parents to address the emotional and behavioral needs of Head Start children (Lopez, Tarullo, Forness, & Boyce, 2000; Yoshikawa & Zigler, 2000).

A previously reported randomized trial in Head Start (Webster-Stratton, 1998) showed that when the Incredible Years Parenting Training Program was offered as a universal prevention program to all parents enrolled in the experimental Head Start centers (regardless of whether they had children with behavior problems), there were significant improvements in parenting interactions with children, reductions in children's negative behaviors, and increases in their prosocial behaviors compared with parents and children from control Head Start centers. Improvements for children whose behavior problems were in the clinical range at baseline were even more pronounced (Webster-Stratton, 1998). Although teachers from experimental classrooms reported significant improvements in students' social competence at school, there were no intervention effects on children's negative behaviors at school. We hypothesized that the failure to provide teachers with training in classroom management skills may have accounted for this finding. Results 1 year later indicated that experimental parents maintained the gains in parenting skills but showed a drop in their school involvement. We hypothesized that a more comprehensive intervention (parent and teacher) with greater focus on parent–teacher bonding

and school outcomes would result in reduced conduct problems, enhanced academic readiness, and greater social competence at school and at home.

Thus the major purpose of this study was to implement two separate empirically validated programs (Incredible Years: Parent Training Program and Teacher Training Program) originally designed for treating children with ODD/CD and evaluate their effectiveness as an early prevention program in Head Start classrooms in a partnership between research staff and trained family service workers and teachers from the agency. These programs' proven effectiveness with clinically referred young children with identified conduct problems (Webster-Stratton, 1990, 1994) suggested their potential as a community-based selective prevention program to prevent and reduce the development of ODD/CD in Head Start children. To address the need for a more comprehensive school intervention that assisted parents with the transition from preschool to kindergarten, we expanded the Incredible Years Parent Training Program (Basic) to span 2 years and to focus on academic (i.e., reading skills) as well as social needs of children. We also added material on parental interpersonal coping skills and collaboration with teachers. In addition, we offered our teacher training program as a prevention strategy for reducing aggressive behavior and promoting social and academic competence in Head Start classrooms. We hypothesized that the two interventions would reduce parent, child, and teacher and classroom risk factors associated with conduct problems and strengthen the protective factors that help to prevent conduct problems. We expected intervention effects on parent and teacher competence, home–school collaboration, child social competence, and conduct problems at home and school.

Method

In the fall of 1997, 14 Head Start centers (36 classes) were randomly assigned (via lottery) with two classrooms assigned to the experimental condition for every one assigned to the control condition. In the experimental condition, parents, teachers, and family service workers participated in the intervention (Incredible Years Training Series; 23 classrooms from 9 centers) and children in the control condition received the regular Head Start program (13 classrooms from 5 centers). These 14 centers were chosen from two large urban Head Start districts (representing five school districts) on the basis of their demographic similarity, willingness to participate in the study, and agreement to random assignment. No centers refused to participate.

Procedures

Recruitment. Head Start family service workers and teachers recruited families to the study during Head Start enrollment. Our staff then conducted a home visit to explain the study in more detail and obtain parental consent (all parents who agreed to the home visit agreed to participate in the project).

Assessments. Assessments in the fall and late spring of the Head Start year consisted of home and classroom observations and teacher and parent reports. One-year follow-up assessments in the spring of the kindergarten year included parent reports and home observations. Assessments were identical for the experimental and control conditions. In both conditions each parent who provided data was given a $50 gift certificate to a local retail store at each assessment phase.

Observation procedures. During home observations mothers were observed interacting with their child for 30 min and were told to do what they would normally do at that time.

Five trained observers had 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). To become "reliable," the observer must achieve an interobserver agreement rate of at least 75% on two consecutive observations. Reliabilities were collected on 15% of home observations at pre-, post-, and follow-up assessments (in both conditions). Observers were blind to condition and coded equally in both conditions.

All children were also observed in the classroom for 30 min of structured and 30 min of unstructured time at each assessment phase. The same reliability procedures outlined previously for the home observers were conducted for the classroom observers.

Intervention. After fall assessments were completed, 37 teachers and teacher assistants from the experimental centers began a 6-day training series, once a month, from November to April. Additionally, in the fall, 13 family service workers from the experimental centers completed a 3-day parent group leader training. Eighteen 12-week parent groups were conducted during the first year of the project. When the children began kindergarten in the fall of 1998, parents in the experimental condition were invited to participate in a 4-week booster parent group program (2 hr per week). Those parents who could not attend the booster group sessions were offered the training individually during two home visits.

Participants

Three hundred and twenty-eight (out of a possible 540 families [60%] who were eligible for the study by virtue of the fact they spoke English, Vietnamese, or Spanish) enrolled in the study (225 experimental and 103 control). Thirty-four of these families (15%) from

the experimental centers and 22 families (21%) from the control centers did not complete the spring assessments (dropped out). Data from prior years indicate that these districts normally experience approximately 22% to 30% drop out during the year; thus our drop-out rate seems to reflect normal Head Start attrition for this area. The experimental and control centers did not differ significantly in the rate of drop out.

The sample of 272 (191 experimental and 81 control) that completed baseline (fall) and post- (spring) assessments represented 50% of all families eligible for the study. Study children included 124 girls (45.6%) and 148 boys (54.4%). Of these, 257 (94.5%) children were living with a biological parent. Study parents included 272 mothers (or other female caregivers, e.g., grandmother). Fifty-two percent of mothers were unpartnered. Because only a small number of fathers or partners participated (only 79 provided data), their data is not included in this article. Sixty-three percent of the children represented minority groups, as determined by parent report (19.1% African American, 18.0% Hispanic, 22.1% Asian American, 1.5% Native American, 2.2% combination, 36.8% Caucasian). On average, children were 55.1 months old (*SD* = 4.33). Average age of mothers was 32.1 (*SD* = 8.23) and of fathers was 34.62 (*SD* = 8.29). Average family income was $11,600. Table 1 describes further risk factors and demographic information about this sample.

Intervention

Parent Training Groups

The major component of the intervention (called the Basic Incredible Years Parenting Program) in the Head Start year teaches positive discipline strategies, effective parenting skills, strategies for coping with stress, and ways to strengthen children's social skills. The 12-week parent training program, an abbreviated version of our established treatment program for families of children with diagnosed conduct problems (Webster-Stratton, 1994; Webster-Stratton & Hammond, 1997), consisted of weekly parent group meetings (6 to 10 parents for 2½ hr, once a week). Groups viewed videotapes of modeled parenting skills. After each 2-min vignette, the group leaders led a focused group discussion of the parent–child interactions. The leaders' collaborative discussion process with parents encouraged problem solving, emphasized self-management, and empowered parents through the support provided by the leader and group members. Topics included (a) playing with

Table 1. *Demographic and Risk Factors for Intervention and Control Groups at Baseline*

Risk Factors	% Intervention[a]	% Control[b]	% Total[c]
Single-Parent[d]	55.8	43.2	52.0
Low Education (Less Than High School)[d]	33.9	27.2	31.9
Financial Aid (on Welfare)	86.2	79.7	84.3
Ethnicity of Child (% Minority)	68.9[e]	49.4[e]	63.1
Sex of Child (% Male)	50.3[e]	64.2[e]	54.4
M < 19 Years/Target Child Born[d]	8.4	6.2	7.7
M Psychiatric Illness[d]	10.5	2.5	7.9
M Substance Abuse[d]	10.5	12.5	11.2
M Criminal History[d]	6.8	1.3	5.0
M Physical or Sexual Abuse as Child[d]	30.9	36.4	34.7
F or BF Substance Abuse	19.1	22.6	20.2
F or BF Criminal History	18.2	9.4	15.3
M Depression (CES–D > 16)[d]	36.9[e]	23.5[e]	32.8
M Anger (BAAQ > 9)[d]	16.7	11.7	15.2
Child Abuse/CPS Current Family[d,f]	3.9	5.6	5.0
Hit, Slap, Spank Frequently[d]	7.4	12.0	10.7
M ECBI Total 11 or More[d,g]	47.1	33.8	43.1
M CBCL Externalizing > 59[d,h]	23.5	19.8	22.4
M CBCL Externalizing > 63[g]	16.6	13.6	15.7
ADHD Rating Scale[i]	14.2	15.4	14.6
SCBE Externalizing < 38[j]	9.1	3.8	7.5
SCBE Social Competence < 38[j]	16.4	9.0	14.1
Risk Factors ≥ 3 (out of 13)	55.5	42.0	51.5

Note: M = mother; F = father; BF = boyfriend; CES–D = Center for Epidemiologic Studies Depression Scale; BAAQ = Brief Anger Aggression Questionnaire; CPS = Child Protective Services; ECBI = Eyberg Child Behavior Inventory; CBCL = Child Behavior Checklist; ADHD = attention deficit hyperactivity disorder; SCBE = Social Competence and Behavior Evaluation.

[a]*N* = 191. [b]*N* = 81. [c]*N* = 272. [d]One of 13 factors included in risk score. [e]Differences between groups at baseline based on χ^2 or *t* tests. [f]Contact with Child Protective Services. [g]ECBI 11 or more cut-off score for indicating clinical range. [h]CBCL > 60 to 63 borderline range (82 to 90 percentile); > 63 clinical range. [i]ADHD > 7 symptoms rated *pretty often* or *very often* indicating clinical range. [j]SCBE scores < 38 on externalizing; social competence scales are below average for normal sample (bottom 10%).

your child, (b) helping your child learn, (c) using praise and encouragement to bring out the best in your child, (d) effective limit-setting, (e) handling misbehavior, (f) teaching your child to problem solve, (g) giving and getting support. Families shown on the tapes came from a variety of ethnic (African American, Asian, Hispanic, and Caucasian) and socioeconomic backgrounds. The program was also translated into Vietnamese and Spanish and offered by trained leaders in languages representing these cultures. The theories guiding the program are subsumed under two general areas: (a) social learning theory, which includes behavioral and cognitive–behavioral views, and (b) "relational theories" based on promoting attachment and nurturing parent–child relationships.

Four booster parent sessions were offered in the kindergarten year (6 to 8 parents for 2 hr, once a week for 4 weeks) to help parents with the transition from Head Start to kindergarten. Home-based training was offered for parents who were unable to attend booster classes (2 to 3 sessions, each lasting 2 to 3 hr). The program was an abbreviated version of our validated Advance and School Incredible Years training programs, previously used with parents of children diagnosed with conduct problems (Webster-Stratton, 1994; Webster-Stratton & Hammond, 1997). Topics included (a) review of child-directed play concepts; (b) facilitating children's friendships and coaching positive peer play skills at home; (c) reading with children using an adaptation of the dialogic interactive reading approach (Arnold, Lonigan, Whitehurst, & Epstein, 1994); (d) problem solving with children; and (e) working successfully with teachers.

Leaders. Family service workers (N = 13) were trained as parent group leaders. Approximately 30% of the family service workers had master's degrees, and the remainder had bachelor's degrees in social work, psychology, or human services.

Intervention integrity. Monthly supervision in the content and techniques of the intervention was provided for family service workers. Research staff coleaders received weekly supervision. An intervention manual specified the content of each session, the videotape vignettes to be shown, questions to be explored, recommended role-plays, weekly activities and stories, and homework assignments. Close monitoring, standardized materials, and comprehensive training assured the integrity of the intervention. All group leaders (a) completed a 3-day training workshop for the Head Start parent program and 2 days of training for the kindergarten program; (b) followed the detailed training manual and session protocols for each session; (c) were observed conducting groups at least once by the project director; (d) conducted their first parent group with one of our trained staff; (e) attended supervision meetings; and (f) kept detailed weekly checklists of group process, intervention content completed, weekly parent attendance, and parents' reactions (ratings of parent participation and interest in topic). One hundred percent of the group leaders discussed all the assigned videotape vignettes in the 12-week period and gave out all the home assignments.

Attendance. Mothers in the experimental condition attended an average of 5.73 (SD = 5.26) parenting sessions during the Head Start year, and partners attended an average of 3.37 sessions (SD = 4.84). Of the 191 mothers, 97 (51%) attended 6 or more sessions, 23 (12%) attended 1 to 5, and 71 (37%) attended no sessions. Of the 56 fathers or partners in the experimental condition, 17 (30%) attended 6 or more sessions, 4 (7%) attended 1 to 5 sessions, and 35 (63%) attended no sessions. In the kindergarten year, 74 mothers (39%) and 15 partners (27%) attended the booster sessions. Sixty-eight (57%) of the 120 mothers who attended any sessions during the Head Start year participated in booster sessions. Fifty-one mothers (69%) who attended booster sessions received the intervention in group format. Twenty-three (31%) received the home intervention format.

Dosage. Average intervention dosage for all experimental mothers (including those who choose not to attend any groups) was 14.32 hr (SD = 13.15) in the first year. In the second year, mothers received an average of 9.08 hr (SD = 2.5) of intervention. There was not a significant dosage difference between mothers who received the intervention at home (8.77 hr) versus those who attended groups (9.78 hr).

Teacher Training Workshops

All Head Start teachers and teacher assistants in the experimental condition received a series of 6 monthly 1-day workshops (i.e., 36 hr of training). The teacher training curriculum focused on teaching classroom-wide positive management and discipline strategies and promoting social competence in the classroom. In addition, teachers were taught to prevent peer rejection by helping aggressive and nonaggressive children learn more appropriate problem-solving strategies. Teachers viewed videotapes of other classroom teachers. After each 2-min vignette, the trainer led a focused group discussion of the teacher–student interactions. Topics included (a) promoting positive relationships with students and families; (b) strengthening student social skills; (c) using incentives to motivate students with be-

havior problems; (d) teaching how to be proactive; (e) handling misbehavior using effective limit setting, ignoring, time out, consequences, and discipline hierarchies; (f) teaching children problem solving, anger management, and friendship skills; (g) helping students to understand and verbalize feelings; and (h) collaborating with parents.

Intervention integrity. Parenting clinic trainers followed a manual that specified the content of each training, the videotape vignettes to be shown, questions to be explored, recommended role-plays, and monthly classroom assignments. Workshop checklists, standardized handouts, and videotaping of all teacher training (reviewed by the investigator) assured the integrity of the intervention. No teachers missed more than one workshop (*M* attendance = 5.8 days). Missed sessions were made up by watching a videotape of the training.

Control Centers

Families, teachers, and family service workers in the control centers continued their regular Head Start curriculum that included parent education on topics such as stress management, nutrition, self-care, and dental care.

Measures

Measures for this study were chosen to define each major outcome construct (i.e., positive and negative parenting, parent–teacher bonding, child conduct problems at home and at school, teacher classroom management style) by multiple measures as reported by multiple agents (teachers, parents, independent observers). Each scale within a construct taps different aspects of the target phenomenon and is subject to different errors of measurement. A construct score is likely to provide better measurement despite lower internal consistency than a single measure or agent. In experimental research, lower reliability coefficients can be accepted as satisfactory when the theory justifies the construct. For example, somewhat dissimilar items are combined to represent multiple facets of a construct (i.e., overt and covert child negative behaviors or observations and report methods), which lowers the reliability coefficient (Rosenthal & Rosnow, 1991). The approach we used to develop construct measures followed a strategy implemented by Dishion, Patterson, Stoolmiller, and Skinner (1991). Scales for each construct were selected from established measures based on our theory of what behaviors the intervention addressed. Each scale was then tested for internal consistency, and items with an item-total correlation of less than .30 were discarded. Principal components analysis was then used to evaluate the scales that were expected to measure the same construct. A single-factor solution was used to ascertain the composition of the scales and their respective construct. Scales with factor loadings of less than .40 were eliminated. A composite score for each construct was computed by first converting the component scales into *z* scores and then averaging them (Dishion et al., 1991).

Parenting Positive and Negative Constructs

Parenting style and skills were assessed by four measures described in the following. From these measures, positive and negative parenting construct scores were derived. The "negative parenting" construct includes one variable from the Parenting Practices Inventory (PPI) parenting practices interview (harsh style), independent observations of critical parenting from the Coder Impressions Inventory (CII: harsh/critical), and total critical statements from the DPICS–R. Factor loadings ranged from .54 to .81 for these variables. The second parenting construct, positive parenting, includes two variables from the LIFT parenting practices interview (positive parenting and monitoring), one from the parent involvement measure (Parent Involvement Questionnaire [INVOLVE-P]—frequency of activities with child), one CII variable (parent provides emotional and cognitive stimulation), and one DPICS–R variable (positive affect praise and physical warmth). Factor loadings ranged from .55 to .67. Because most of the individual scales used in the constructs have been described in detail elsewhere (Webster-Stratton, 1998), they are only briefly detailed here.

Parenting practices (interview PPI). This questionnaire was adapted from the Oregon Social Learning Center's discipline questionnaire and revised for young children. The three summary scores used in our parenting constructs were (a) harsh style (14 items including use of parent force such as verbal or physical aggression); (b) positive style (15 items including verbal encouragement, praise and reinforcement, and use of incentives or privileges); and (c) monitoring (9 items including knowing where child is, time child is without supervision, degree of supervision). Internal consistency in this study for discipline style was moderate to good: .75 for harsh style, .72 for positive parenting, and .64 for monitoring.

DPICS–R. The DPICS originally developed by Robinson and Eyberg (1981) and revised by Webster-Stratton (1989) is a widely researched observational

measure for recording behaviors of children and their parents in the home. In this study we use two separate parent summary variables in our parenting constructs: (a) positive parenting (including praise, positive affective, and physically positive behavior) and (b) total critical statements. Intraclass correlations coefficients as a measure of interrater reliability for DPICS–R mother summary scores were .99 for critical statements and .98 for positive parenting. Cronbach's alpha for critical statements is .73 and for positive parenting is .60.

CII—parenting style. The CII was adapted from the Oregon Social Learning Center Impression Inventory. The CII is completed following a ½ hr parent–child observation. Two scores from this measure were used in our parenting constructs: (a) harsh/critical (12 items pertaining to lack of acceptance, condemnation, and disregard for the child, criticisms, sarcasm, anger, and unreasonable requests) and (b) the extent to which mother provided child with emotional and cognitive stimulation. Critical parenting has acceptable internal consistency (Cronbach's α = .87) and interrater reliability (ICC = .80). For the second variable, coders were asked to provide global ratings for amount of stimulation. The intraclass correlation for this variable was .84.

Parent–Teacher Bonding Construct

From the measures described in the following, a school bonding construct was derived consisting of two teacher reports (Teacher Involvement Questionnaire [INVOLVE–T]: Involvement and Bonding) and one parent report (INVOLVE–P: Bonding). Factor loadings ranged from .56 to .87.

INVOLVE–P and INVOLVE–T. This scale, derived from the Oregon Social Learning Center questionnaire, was revised for use with parents and teachers of young children. This questionnaire evaluates the amount and quality of parents' involvement with their children's education at home and at school. The parent version (INVOLVE–P) assesses two types of involvement: (a) the frequency of parents' involvement with child (6 items, such as eating together, reading and discussing books together, doing fun activities or projects together, talking together; this scale was included in our positive parenting construct) and (b) parents' bonding/satisfaction with teacher and school (21 items, such as parent feels connected to teacher, welcome in classroom, able to offer suggestions, enjoys talking with teacher, feels teacher listens and cares, has confidence in school; this was used in the school bonding construct). Internal consistency for these two scales was acceptable, alphas are .75 and .90, respectively.

Two subscales from the teacher version (INVOLVE–T) were used in our school bonding construct: (a) teacher bonding with parent (7 items, including teacher called, wrote note, invited parent to school) and (b) parent involvement with school/teacher (7 items, including parent called teacher, attended school meetings, volunteered in classroom, asked questions). Alphas are .76 and .84, respectively.

Child Conduct Problems at Home Construct

The conduct problems at home construct includes two parent report variables (the Eyberg Child Behavior Inventory [ECBI] intensity scores and total Child Behavior Checklist [CBCL]) and two independent observations of aggression and inappropriate behavior in the home (CII percentage of time the child acts inappropriate and DPICS–R total deviance and noncompliance). These report measures have been standardized with preschoolers (Achenbach & Edelbrock, 1991; Boggs, Eyberg, & Reynolds, 1990) and with a variety of ethnic groups and shown to be sensitive to our intervention program with young children (Webster-Stratton, 1998; Webster-Stratton & Hammond, 1997, 1998). Because these measures have been described in detail elsewhere (Webster-Stratton, 1998), they are only briefly detailed here. Factor loadings ranged from .40 to .84 for these variables.

CBCL. The parent form of the CBCL (Achenbach & Edelbrock, 1991) consists of 118 items dealing with behavior problems. In this study, the total *t* score was the variable of interest because at this age internalizing and externalizing problems are often highly intercorrelated and because our intervention sought to reduce both types of problems. The CBCL has established norms; intraclass correlations were .98 for interparent agreement and .84 for test–retest reliability. Cronbach's alphas by ethnic group ranged from .89 to .96.

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 0.86 (test–retest) to 0.98 (internal consistency). This study uses the Total Intensity score, which is an indicator of the frequency with which behavior problems occur. Cronbach's alpha for the Caucasian group was .92 and for other ethnic groups ranged from .90 to .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. One summary variable was used in the child conduct problems at home construct: total child deviance and noncompliance (sum of whine, cry, physical negative, smart talk, yell, destructive, and noncompliance; ICC = .95) and Cronbach's alpha is .73.

CII—child. Described previously in relation to parent behavior, one child CII variable was included in the conduct problems at home construct: percentage of time the child acts inappropriate (ICC = .83).

Child Conduct Problems at School Construct

This construct includes three teacher report variables—ADHD rating scale, Social Competence and Behavior Evaluation (SCBE) externalizing and reversed social competence scores—and three independent observations of child behaviors at school (multiple option observation system for experimental studies [MOOSES] child conduct problems, Social Health Profile antisocial behaviors, and reversed engagement, which are described in the following). Factor loadings ranged from .44 to .77. School observations were not conducted at 1-year follow-up, so construct scores are only available for pre- and postassessments.

SCBE–preschool edition. This measure (LaFreniere, Dumas, Dubeau, & Capuano, 1992) is an 80-item Likert rating scale developed to assess patterns of social competence, emotional regulation and expression, and adjustment difficulties in children from preschool through age 8 years. It has been normed with Head Start multiethnic children (LaFreniere & Dumas, 1995). The questionnaire, completed by teachers, has four summary scores (social competence, internalizing problems, externalizing problems, and general adaptation) balanced for positive (competence) and negative (emotional or behavioral problems) items, covering an extensive array of behaviors commonly seen within a preschool setting. The scale has good internal consistency, with Cronbach's alpha coefficients ranging from .80 to .89. The externalizing problems and social competence scores loaded onto the child conduct problems at school construct. Cronbach's alpha for the ethnic groups ranged from .86 to .95.

Teacher ADHD checklist. The ADHD checklist (DuPaul, 1990) is a 14-item rating scale, taken from the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.; American Psychiatric Association, 1987) developed to assess the presence of attention deficit hyperactivity disorder. The ADHD checklist yields one factor and has adequate reliability (alpha and test–retest .90). It has been shown to discriminate ADHD children from normal children (Barkley, 1996). The score is derived from the number of symptoms rated 2 or higher on a scale ranging from 0 (*not at all*) to 3 (*very much*).

Independent observations of teacher in classroom (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 two separate child variables: (a) percentage of time the child was engaged or involved in classroom activities during unstructured time (ICC = .88) and (b) total child conduct problems such as negative, aggressive, and noncooperative behaviors with peers and teachers in the classroom (ICC = .72). Total conduct problems were calculated as rates per 30 min.

Social health profile. This measure is a revised version of the Teacher Observation of Classroom Adaptation–Revised (Werthamer-Larsson, Kellam, & Oveson-McGregor, 1990), designed to be completed by the school observers after observing the child in the classroom. In this study we used the school readiness antisocial behavior 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).

Teacher Classroom Management Style and Classroom Atmosphere Construct

A score for the teacher classroom management construct was computed for each classroom (N = 34 classrooms). This construct included five variables: MOOSES teacher criticism, teacher praise, classroom atmosphere, and teacher coder impression–harsh discipline, and positive techniques. In computing the score, scales were reversed for MOOSES criticals, poor classroom atmosphere, and teacher coder impression–harsh techniques, so the construct score is in the positive direction. School assessments were not conducted at 1-year follow-up, so construct scores are only available for pre- and postassessments. Factor loadings ranged from .40 to .94.

Classroom atmosphere measure. This 10-item questionnaire developed by Fast Track (Conduct Problems Prevention Research Group) is completed by school observers rating overall classroom atmosphere. Observers 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. In our samples this scale shows good internal consistency (Cronbach's alphas ranged from .94 to .95) and adequate interrater reliability (ICC = .55 to .70).

Independent observations of teacher in classroom (MOOSES). The MOOSES observation coding system was described previously. This study used two separate teacher variables: (a) total praise and encouragement (ICC = .95) and (b) total critical statements (ICC = .90). These were computed as rates per 30 min.

Teacher Coder Impression Inventory. This is a measure of teacher behavior and teacher–child interactions in the classroom modeled after the CII for parents. Two summary scores were used in the teacher constructs: (a) harsh techniques (13 items, including teacher threats, criticisms, guilt induction, sarcasm, anger, physical aggression, and verbal aggression), α = .97 and ICC = .69; (b) positive techniques (7 items, including pinpointing infraction, modeling positive behavior, problem solving, positive, and reinforcing), α = .75 and ICC = .65.

Parent and Teacher Satisfaction With Program

Three to four 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 (adapted from the work of Forehand & McMahon, 1981).

Demographic and Family Risk Factors

Because the risk factors were only used in this article to describe the sample at baseline, they are not described in detail here (for more details on reliability and validity in this population, see Webster-Stratton & Hammond, 1998). Mothers completed the Center for Epidemiologic Studies Depression Scale, which provides a reliable and valid index of self-reported depressive symptoms (Radloff, 1977); the Assessing Environments III (Berger, Knutson, Mehm, & Perkins, 1988), a measure of childhood punitive experiences and environmental characteristics indicative of an abusive family; the Life Experiences Questionnaire (Sarason, Johnson, & Siegel, 1978); and the Brief Anger Aggression Questionnaire (Maiuro, Vitaliano, & Cohn, 1987), a measure developed for assessment of anger levels.

Results

Attrition analyses comparing those who remained in the project at postassessment (N = 272) with those who completed baseline assessments (N = 328) indicated no significant differences in the number of dropouts in the control and intervention groups. Differences between dropouts and nondrops on the risk, demographic variables, and construct scores were examined separately (using chi-square and t tests) for control and intervention groups. There were no significant differences between dropouts and nondropouts on any risk factors, demographic variables, or construct scores for experimental families and only one difference for control; in the control group the percentage of families reporting conduct problems (on the ECBI) was higher for the dropouts (63.6%) than nondropouts (33.8%), $\chi^2(1, N = 102) = 5.23$, $p < .02$. In other words, more control who reported children with behavior problems dropped out between pre- and postassessments.

Analyses compared the baseline equivalence of the experimental and control groups of the sample who completed both pre- and postassessments (N = 272) in terms of risk and demographic factors. There were significantly fewer boys and significantly (> .05) more minorities in the experimental group than in the control group. Mothers in the experimental group reported significantly worse scores on several risk factors than control group families (depression, income, life events; see Tables 1 and 2 for descriptive data).

The sample included in analyses that address the impact of the intervention at immediate postintervention includes the 272 families (191 experimental and 81 control) who completed the pre- and postassessments. It is important to note that all participants in the experimental condition who completed the postassessments are included in these analyses, regardless of the dosage of intervention they received. Of the 191 experimental mothers who completed postassessments, 23 (12%) attended less than six of the parenting classes and 71 (37%) attended no parenting sessions at all. These 94 families were considered to be intervention "noncompleters" because they had either "inadequate" dosage of intervention (less than half) or no parent intervention at all. These families are included in the analyses because they are part of the population we intended to impact with our prevention program: "the intent-to-intervene with" sample.

Table 2. *Immediate Effects of Intervention on Parenting Constructs and Parent–Teacher Bonding*

	Control Group					Intervention Group					
	Pre		Post			Pre		Post			
Construct Scores Component Measures	***M***	***SD***	***M***	***SD***	**Adjusted *M***	***M***	***SD***	***M***	***SD***	**Adjusted *M***	**ANCOVA[a] *F* for Condition**
Estimate of Negative Parenting[b]	–0.19	0.71	0.05	0.76	0.14	0.09	0.71	–0.03	0.74	–0.11	8.79**
Harsh Discipline (PPI)	2.35	0.61	2.30	0.62		2.60	0.76	2.31	0.65		
Negative Parenting (CII–M)	1.26	0.28	1.33	0.28		1.37	0.29	1.33	0.26		
Critical Statements (DPICS–R)	14.80	13.03	16.99	15.38		15.28	14.25	13.15	13.60		
Estimate of Positive Parenting[b]	0.21	0.51	–0.03	0.62	–0.15	–0.11	0.68	–0.03	0.69	0.10	13.88***
Positive Parenting (PPI)	4.63	0.63	4.63	0.60		4.44	0.75	4.70	0.75		
Monitoring (PPI)	6.03	0.66	6.02	0.71		5.78	0.89	5.97	0.70		
Frequency Activities With Child (INVOLVE–P)	5.84	1.05	5.74	1.11		5.51	1.18	5.73	1.08		
Emotional/Cognitive Stimulation (CII–M)	3.81	1.05	3.81	1.08		3.57	1.11	3.84	0.95		
Positive Affect, Praise, Physical Positive (DPICS–R)	25.97	20.07	23.51	17.15		20.60	16.37	24.43	17.90		
Estimate of Parent–Teacher Bonding[b]	0.29	0.49	0.05	0.36	–0.09	–0.16	0.46	–0.01	0.40	0.14	6.39*
Parent Involvement With School/Teacher (INVOLVE–T)	2.19	0.40	2.00	0.31		1.90	0.39	2.05	0.37		
Teacher Bonding With Parent (INVOLVE–T)	3.01	0.35	2.87	0.33		2.68	0.39	2.84	0.31		
Parent Bonding With School/Teacher (INVOLVE–P)	3.77	0.32	3.89	0.28		3.63	0.26	3.74	0.24		

Note: Maximum $N = 81$ control and 191 intervention. $N = 12$ control and 23 intervention (parent–teacher bonding). PPI = Parenting Practices Inventory; CII–M = Coder Impression Inventory–Mother; DPICIS–R = Dyadic Parent–Child Interactive Coding System–Revised; INVOLVE–P = Parent Involvement Questionnaire; INVOLVE–T = Teacher Involvement Questionnaire.

[a]ANCOVA is significant for intervention attenders versus controls; $p < F(1, 161) = 7.28$, $p < .01$. [b]Estimates are *z* scores.

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

Baseline Parent and Child Behaviors

Analyses next compared the equivalence of the experimental and control groups in terms of the baseline assessments on outcome constructs. Results indicated no significant differences in the baseline child conduct problems at home or at school constructs, and there were no differences on the teacher classroom management construct. However, there were significant (> .05) differences between experimental and control conditions on the negative and positive parenting constructs and the parent–teacher bonding construct. Analyses revealed that the experimental mothers had higher negative parenting scores and lower positive parenting and bonding scores than controls.

In the combined sample (experimental and control), approximately 50.2% of the mothers were in the high-risk range on the DPICS critical variable according to a cut-off point established from our discriminative validity study comparing referred and nonreferred samples (Webster-Stratton, 1998; Webster-Stratton & Hammond, 1998). On the CII, 19.1% of mothers were in the moderate-to-high range for harsh/critical discipline techniques (including condemnation, disregard, sarcasm, neglect, criticism, lack of acceptance; i.e., more than six harsh acts in 30 min). Approximately 39.3% of the children were in the high-risk range on the DPICS child deviant variable according to our cut-off point (i.e., greater than eight deviant plus noncompliant behaviors in 30 min; Webster-Stratton & Hammond, 1998).

Intervention Effects: Short-Term Results

Analysis strategy. Intervention effects were evaluated for the six constructs described. Because our experimental and control groups were significantly different at baseline on two of the six construct scores, we conducted analyses of covariance on the posttreatment construct scores using the corresponding pretest construct score as a covariate. When the analysis of covariance (ANCOVA) showed a significant group effect for the construct, the adjusted posttreatment means were examined to check our hypotheses that the experimental group would improve significantly but the control would not. See Tables 3 and 4 for pre- and posttreatment means, ANCOVA results, and adjusted means. The teacher, parent–teacher bonding, and the child behavior at school constructs were analyzed at the classroom level (average of all teachers or children in the classroom) to control for classroom effects.

Negative and positive parenting constructs. The ANCOVA revealed significant experimental effects for the negative parenting construct, $F(1, 227) = 8.79$, $p < .01$, and for the positive parenting construct, $F(1, 224) = 13.88$, $p < .001$. Adjusted means at post for both constructs show differences in the predicted direction. Experimental mothers showed lower levels of negative parenting and higher levels of positive parenting than control mothers. Because more than one third of the experimental sample did not attend parent sessions, we also analyzed the data comparing "attenders" (experimental mothers who attended at least half of the parent sessions, i.e., six or more). These results were also significant and in the predicted direction, for both constructs.

Parent–teacher bonding construct. ANCOVAs revealed significant experimental effects for the bonding construct in the predicted direction (i.e., greater bonding in the experimental than the control group), $F(1, 32) = 6.39$, $p = .02$. Experimental mothers and teachers showed higher levels of bonding than control mothers' and teachers' reports, suggesting that experimental mothers were more involved with their teacher and in their children's education both at home and in the classroom.

Child conduct problems at home construct. The ANCOVA revealed a trend toward significance in the predicted direction on child conduct problems at home construct, $F(1, 234) = 3.55$, $p = .06$. Analyses of the children of intervention attenders compared with the control children revealed significant intervention effects, $F(1, 171) = 4.47$, $p < .05$. Adjusted means indicated that experimental children exhibited fewer conduct problems at home than control children.

Child conduct problems at school construct. The ANCOVA revealed significant group effects for the child conduct problems at school construct, $F(1, 32) = 4.63$, $p < .04$. Adjusted means show that, following intervention, children in experimental classrooms showed significantly fewer behavior problems at school, including lower teacher reports of hyperactivity and antisocial behaviors and more social competence than control children.

Teacher classroom management. The ANCOVA revealed significant group effects for the teacher classroom management construct, $F(1, 32) = 7.02$, $p < .01$. Adjusted means showed that, following intervention, teachers in experimental classrooms showed better classroom management, including more positive and less harsh and critical techniques, than control teachers.

Table 3. *Immediate Effects of Intervention on Child Self-Regulation and Social Competence Constructs at Home and School*

	Control Group					Intervention Group					
	Pre		Post			Pre		Post			
Construct Scores Component Measures	***M***	***SD***	***M***	***SD***	**Adjusted *M***	***M***	***SD***	***M***	***SD***	**Adjusted *M***	**ANCOVA *F* for Condition**
Estimate of Conduct Problems at Home[b]	0.02	0.64	0.10	0.72	0.10	0.00	0.67	–0.06	0.72	–0.05	3.68[a†]
Intensity Score (ECBI)	93.36	31.97	86.38	33.26		93.17	32.23	81.06	30.41		
Behavior Problems *T* Score (CBCL)	52.08	9.24	48.90	9.99		52.25	10.38	49.80	10.46		
Percent Time Child Inappropriate (CII–M)	2.30	2.11	2.63	2.58		2.01	2.06	1.84	1.72		
Child Deviance, Noncomply, No Opportunity (DPICS–R)	37.28	23.74	36.68	25.19		38.99	30.49	33.90	27.88		
Estimate of Conduct Problems at School[b]	–0.03	0.35	–0.15	0.28	–0.16	0.00	0.39	0.05	0.41	0.06	4.63*
Percent Time Child Engaged (Unstructured; MOOSES)	98.68	0.85	98.23	1.43		97.61	1.22	98.41	1.37		
Child Negative to Peers/Teacher—30 min (MOOSES)	1.16	0.63	1.36	1.36		2.18	1.43	1.41	1.69		
Total Score (ADHD)	11.36	5.14	11.86	4.92		9.55	4.68	8.34	5.60		
Externalizing Scale Raw Score (SCBE)	82.02	9.11	80.97	8.05		85.80	6.38	84.00	8.65		
Social Competence Scale Raw Score (SCBE)	124.52	22.42	127.70	19.13		125.30	28.80	138.87	23.49		
Antisocial Behavior (SHP–TOCA)	7.12	1.95	6.94	3.97		8.12	3.62	5.43	3.26		
Estimate of Teacher/Classroom Management[b]	0.05	0.72	–0.28	0.87	–0.31	–0.02	0.78	0.16	0.72	0.19	7.02**
Teacher Criticals—30 min (MOOSES)	2.73	2.51	6.44	11.49		2.85	3.03	1.98	1.89		
Harsh Teacher Techniques (TCI)	1.61	0.34	1.73	0.45		1.67	0.34	1.57	0.41		
Poor Classroom Atmosphere (CAR)	2.66	0.37	2.67	0.53		2.67	0.52	2.53	0.49		
Positive Teacher Techniques (TCI)	2.05	0.36	2.06	0.39		2.02	0.31	2.23	0.41		
Teacher Praise—30 min (MOOSES)	7.48	2.45	6.73	3.48		7.33	4.53	11.82	12.37		

Note: Maximum $N = 81$ control and 191 intervention. $N = 12$ control and 23 intervention (conduct problems at home and classroom management). ECBI = Eyberg Child Behavior Inventory; CBCL = Child Behavior Checklist; CII–M = Coder Impression Inventory–Mother; DPICS–R = Dyadic Parent–Child Interactive Coding System; MOOSES = multiple option observation system for experimental studies; ADHD = attention deficit hyperactivity disorder; SCBE = Social Competence and Behavior Evaluation; SHP–TOCA = Social Health Profile–Teacher Observation of Classroon Adaption; TCI = Teacher Coder Impression; CAR = Classroom Atmosphere Report.

[a]ANCOVA is significant for intervention attenders versus controls; $p < F(1, 171) = 4.47$, $p < .05$. [b]Estimates are *z* scores.

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

Table 4. *One-Year Follow-Up Intervention Versus Control Families—Parent and Child Constructs*

	Control Group					Intervention Group					
	Pre		Follow-Up			Pre		Follow-Up			
Construct Scores Component Measures	***M***	***SD***	***M***	***SD***	**Adjusted *M***	***M***	***SD***	***M***	***SD***	**Adjusted *M***	**ANCOVA *F* for Condition**
Estimate of Negative Parenting	–0.09	0.82	0.07	0.76	0.10	0.04	0.76	–0.02	0.75	–0.05	1.82[a]
Harsh Discipline (PPI)	2.38	0.59	2.26	0.58		2.57	0.74	2.20	0.62		
Negative Parenting (CII–M)	1.28	0.30	1.28	0.28		1.35	0.30	1.26	0.26		
Critical Statements (DPICS–R)	16.56	14.69	17.25	18.03		15.86	15.20	14.29	13.95		
Estimate of Positive Parenting	0.24	0.52	0.03	0.60	–0.08	–0.11	0.71	–0.04	0.69	0.07	3.50[a†]
Positive Parenting (PPI)	4.59	0.65	4.53	0.60		4.46	0.77	4.57	0.77		
Monitoring (PPI)	6.12	0.65	6.20	0.55		5.72	0.96	5.89	0.70		
Frequency Activities With Child (INVOLVE–P)	5.93	0.98	5.63	1.23		5.44	1.24	5.69	1.04		
Emotional/Cognitive Stimulation (CII–M)	3.77	1.02	3.96	0.95		3.59	1.13	3.87	1.07		
Positive Affect, Praise, Physical Positive (DPICS–R)	28.25	22.28	22.25	16.76		22.05	16.63	25.06	19.62		
Estimate of Parent–Teacher Bonding	0.29	0.52	0.38	0.42	0.37	–0.17	0.47	–0.11	0.37	–0.10	8.55**
Parent Involvement With School/Teacher (INVOLVE–T)	2.19	0.42	1.94	0.36		1.90	0.39	1.68	0.33		
Teacher Bonding With Parent (INVOLVE–T)	3.01	0.37	2.80	0.20		2.67	0.40	2.51	0.20		
Parent Bonding With School/Teacher (INVOLVE–P)	3.77	0.32	3.56	0.26		3.63	0.26	3.34	0.20		
Estimate of Conduct Problems at Home	0.06	0.68	0.14	0.72	0.10	–0.06	0.68	–0.09	0.66	–0.06	3.39[†]
Intensity Score (ECBI)	96.11	32.99	92.64	31.77		90.51	31.30	79.95	30.51		
Behavior Problems *T* Score (CBCL)	51.67	9.91	49.33	11.82		52.16	10.11	48.05	11.19		
Percent Time Child Inappropriate (CII–M)	2.08	2.02	1.61	1.47		1.80	1.95	1.60	1.48		
Child Deviance, Noncomply, No Opportunity (DPICS–R)	40.24	25.70	34.75	23.58		37.45	31.83	28.19	20.51		

Note: Maximum $N = 59$ control and 141 intervention (parenting and child conduct at home). $N = 12$ control and 23 intervention (parent–teacher bonding). PPI = Parenting Practices Inventory; CII–M = Coder Impression Inventory–Mother; DPICS–R = Dyadic Parent–Child Interactive Coding System; INVOLVE–P = Parent Involvement Questionnaire; INVOLVE–T = Teacher Involvement Questionnaire; ECBI = Eyberg Child Behavior Inventory; CBCL = Child Behavior Checklist.

[a]Significant for intervention attenders versus controls; $F(1, 110) = 3.81$, $p < .05$ for negative parenting; $F(1, 125) = 8.17$, $p < .01$ for positive parenting.

[†]$p < .10$. *$p < .05$.**$p < .01$.***$p < .001$.

Clinical significance. A major concern is the extent to which the intervention produced clinically significant improvements in that portion of the population who exhibited high-risk behaviors at baseline. We defined "clinical" responders and nonresponders to the intervention in two ways. First, because the most proximal variable we sought to influence by our parent intervention was parenting style and behavior, we defined "mother responders" as those who showed a reduction of at least 30% from baseline in total critical behaviors. Only "high-risk" mothers who had more than 10 critical statements in 30 min (n = 117; 50.2% of total) at baseline were included in this analyses (Webster-Stratton & Hammond, 1998; Webster-Stratton & Lindsay, 1999). We chose independent observations of mother critical behaviors as our primary outcome variable because it was less biased than mother self-reports and because of the low frequency of observable physical negative discipline during home visits. Moreover, prior research has shown that frequency of criticisms discriminates between abusive and nonabusive parenting and is highly correlated with child deviant behaviors and noncompliance (r = .53; Webster-Stratton, 1985a). Finally, 30% improvement has been used as a criterion to indicate clinically significant changes by ourselves (Webster-Stratton, Hollinsworth, & Kolpacoff, 1989) and other researchers (when there are no established norms for behavioral observation data; e.g., Patterson, 1982; Patterson, Chamberlain, & Reid, 1982).

Second, we determined clinically significant improvements in child conduct by comparing percentages of intervention and control children who were in the high range at baseline and in the low range at postassessment. High-risk children were defined as having nine or more deviant and noncompliant behaviors in the 30 min home observation (n = 233; 42.9% of total). This cutoff significantly discriminated between clinic and nonclinic samples in our previous studies (Webster-Stratton, 1985a, 1985b). We determined clinically significant improvements in child social competence by comparing experimental and control teacher reports of children who were above the normal published cutoff on the SCBE at baseline and fell in the normal range at the end of the year (n = 42; 17.6% of children). We determined clinically significant improvements in children's behaviors in the classroom by a 30% decrease in observable deviant and noncompliant behaviors from baseline.

Analysis indicated that 60.8% of the high-risk mothers in the experimental condition (and 74% of those attenders who attended six or more sessions) showed a 30% reduction in critical statements at postassessment compared to 31.6% of the high-risk mothers in the control condition, $\chi^2(1, n = 117) = 8.74$, $p < .01$. Independent observations of child behaviors at home indicated that 57.8% of the high-risk children in the experimental condition moved from the high to low range for negative behaviors at postassessment compared with 36% of the control children $\chi^2(1, n = 100) = 4.34$, $p < .03$. According to teacher reports of social competence for those children above the normal cutoff at baseline, 71% of experimental children fell into the normal range at the end of the year versus 36.6% the control children, $\chi^2(1, n = 26) = 4.12$, $p < .04$. Observations of child behaviors at school indicated that 95.5% of experimental children showed at least a 30% reduction in noncompliance and negative behaviors with teachers, compared with 55.6% of control children, $\chi^2(1, n = 26) = 7.51$, $p < .01$.

Consumer satisfaction. Consumer satisfaction with the program was high, with 89% of mothers reporting *positive* to *very positive* satisfaction with the program and 67% reporting expectations of further positive results from the program. In addition, 84% of program participants reported that they would recommend the program to other parents. Multiple teaching methods (videotapes, group discussion, home activities, books, leader teaching) were rated as *useful* or *very useful* in more than 72% of the cases. The overall content of the program was rated as *useful* or *very useful* by 88% of the participants. Of the specific parenting techniques covered, praise, encouragement, rewards, and problem solving were rated the most useful. The majority of parents (81%) wanted their groups to continue.

Following the last day of teacher training, teachers rated their satisfaction with the program. Ninety-one percent of teachers rated the leader's teaching as *helpful*, 91% rated the videotape format as *helpful*, 94% felt the content was *helpful*, and 97% gave an overall positive rating.

Intervention Effects: 1-Year Follow-Up Results

In the spring of 1999, 200 families (74% of the sample who completed postassessments; 141 experimental and 59 control) were reassessed by means of home observations and parent and teacher reports. There were no school observation assessments at follow-up.

Attrition. Analyses comparing the experimental (n =141) and control (n = 59) groups at follow-up on the demographic and baseline risk factors showed that there continued to be no significant differences in the percentage of dropouts between conditions. Differences between dropouts and nondropouts between baseline and follow-up on the risk and demographic factors were examined separately for control and experimental groups. For the control group, the percent-

age of fathers who had a history of alcohol/drug abuse was lower for dropouts (5.9%) than for nondropouts (31.4%), $\chi^2(1, n = 69) = 5.78$, $p < .05$, and mother's age was lower for dropouts ($M = 29.2$) than for nondropouts ($M = 33.8$), $t(98) = 3.25$, $p < .01$. In the experimental group, mother's baseline negative life events score was lower for dropouts ($M = 8.4$) than for nondropouts ($M = 14.0$), $t(216) = 3.13$, $p < .01$. Age of female head of household was lower for dropouts ($M = 30.0$) than for nondropouts, ($M = 32.6$), $t(215) = 2.18$, $p < .05$. The baseline construct score for parent–teacher bonding was higher for dropouts ($M = .11$) than for nondropouts ($M = –.20$), $t(152) = –2.36$, $p < .05$. The baseline construct score for child behavior problems at home was lower for dropouts ($M = –.14$) than for nondropouts ($M = .06$), $t(220) = 1.98$, $p < .05$. In summary, with the exception of young age, mothers who dropped out of the experimental group seemed to be at lower risk and their children exhibited fewer behavior problems at baseline than those who continued the project. This trend suggests that the experimental condition was more likely to attract and retain the higher risk families than the control condition, possibly because of the increased support they received. Although this trend is desirable in terms of providing intervention to families who need it the most, it may make it more difficult to detect treatment effects.

Intervention effects for baseline to follow-up. Follow-up analyses consisted of ANCOVAs using follow-up construct scores with corresponding baseline construct scores as covariates (see Table 4 for follow-up results). We analyzed four of the original six constructs (negative and positive parenting, parent–teacher bonding, and child behavior problems at home). We did not have follow-up information on teacher classroom management or child conduct problems at school.

The ANCOVA revealed a trend in the predicted direction for the positive parenting, $F(1, 192) = 3.50$, $p = .06$, and the child conduct problems at home, $F(1, 194) = 3.39$, $p = .07$, constructs. There was no significant follow-up effect for the negative parenting construct. Analyses of attenders (mothers who attended a total of nine or more Year 1 plus Year 2 intervention sessions) from the experimental condition revealed significant effects for the negative parenting construct, $F(1, 110) = 3.81$, $p < .05$, and positive parenting construct, $F(1, 110) = 8.17$. $p < .01$, and a trend for child conduct problems at home in the predicted direction, $F(1, 125) = 3.27$, $p = .07$. The parent–teacher bonding construct was significant, $F(1, 30) = 8.55$. $p < .007$, but examination of the adjusted means showed that these effects were not in the predicted direction; at follow-up, experimental mothers showed less bonding with teachers than control mothers.

Consumer satisfaction. Mothers reported high levels of satisfaction with the transition to kindergarten intervention. Ninety-five percent reported overall positive feelings about the intervention, 97% expected good results from the program, 73% were confident in their ability to manage current behavior problems at home, and 70% were confident in their ability to manage future behavior problems. On average, mothers rated all content and techniques used in the groups as *useful* or *extremely useful*. On most variables mothers who received intervention in groups did not differ significantly from those who received the home intervention; however, mothers in groups rated the usefulness of discussions about the material, $t(61) = 2.22$, $p = .03$, and usefulness of the role-plays, $t(61) = 2.69$, $p = .009$, significantly higher than mothers who received home intervention. Mothers in the groups also had significantly higher overall feelings about the program, $t(61) = 2.16$, $p = .04$.

Clinical significance at follow-up. At 1-year follow-up, we examined the clinical significance of the findings in terms of the distal variable (i.e., reductions in children's conduct problems). The clinically significant findings that we found at postassessment continued to be present 1 year later. Analyses indicated that 80% of the experimental children were below our "at-risk" cutoff (fewer than nine problems per 30 min) for conduct problems at home compared to 48% of the control children $\chi^2(1, 43) = 6.75$, $p < .008$. This difference was significant with the whole sample (as well as with the children of parents classified as attenders).

Discussion

The purpose of this study was to evaluate a theory-based selective prevention program that focused on both parents and teachers. We expanded on our prior randomized study with Head Start by adding a comprehensive year-long teacher training program to our parent training program. The primary goal of these two interventions was to strengthen protective factors and reduce risk factors in children and families identified as at-risk by virtue of living in poverty situations. We hoped to increase teachers' use of positive classroom management strategies, promote positive classroom atmosphere, enhance children's self-regulation skills, reduce conduct problems at home and at school, increase parents' use of positive parenting and discipline strategies, and strengthen home–school connections. These are considered the most proximal links in the chain leading to the prevention of conduct problems and later development of delinquency and substance abuse (Hawkins et al., 1992).

The short-term results of this study indicated that the intervention was effective in increasing parents' positive parenting style and school bonding and reducing harsh discipline compared with control mothers. Results also indicated that experimental children showed significant reductions in conduct problems at school and a trend in the predicted direction for reductions in conduct problems at home. Secondary analyses indicated that when mothers attended at least 50% of the parent training sessions (six or more sessions), child conduct problems at home improved significantly. At 1-year follow-up, the experimental effects were maintained for attenders on the positive and negative parenting constructs and showed a trend for the child conduct construct.

Assessment of clinically significant improvements in behavior indicated that experimental children who exhibited high levels of risk behavior at baseline (aggression, noncompliance, poor social skills) were significantly more likely to fall into the normal range on these behaviors postintervention and at 1-year follow-up than high-risk children in the control group. In fact, at 1-year follow-up, 80% of these high-risk experimental children had moved into the "low-risk" range compared to 48% of control children.

We are encouraged that our results show sustained effects in a community-derived sample on aggressive and noncompliant behaviors, the most important predictors of later delinquency and substance abuse. We also believe that our follow-up estimates may be conservative estimates of our intervention effects because of the differential attrition in the control and experimental groups. There was some indication that dropouts from the experimental condition were less stressed and had children with fewer behavior problems, whereas the opposite pattern appeared to be true in the control group. Thus our final follow-up sample may have overrepresented stressed families and children with behavior problems in the experimental group and underrepresented these families in the control group, perhaps making it more difficult to detect significant improvements in the experimental relative to the control group.

These results replicate our prior randomized trial with Head Start families that demonstrated nearly identical results (Webster-Stratton & Hammond, 1997) in terms of strengthening parenting competence. Moreover, this study extended our prior study by adding the teacher training component. Analysis of individual components of the teacher behavior management construct showed experimental effects on teachers' observed critical and harsh discipline techniques such that, postintervention, trained teachers used fewer negative management strategies than control teachers. Our prior study, which did not offer teacher training, found no experimental effects for these teacher variables. Results in regard to the child distal variables—that is, reductions in children's conduct problems behaviors—are equally promising, particularly in regard to those children whose parents were attenders in the parent groups. Another noteworthy aspect of this study is the significant improvement in child conduct problems at school. Without teacher training, in our prior study, there were few experimental effects on children's behaviors at school. In this study, there were significant experimental effects in children's observed aggressive and noncompliant behavior at school, teacher-reported ADHD symptoms, and teacher reports of social competence. The clinical significance analyses indicated that 95.5% of the experimental children showed a clinically significant (30%) drop in noncompliance with teachers and peer aggression compared with 55% of the control children.

These findings suggest the importance of training and supporting teachers as a relatively cost-effective method of improving social outcomes for children and preparing them for kindergarten. Our high rates of teacher attendance at the trainings and the high satisfaction ratings indicated that teachers found this material relevant, helpful, and worthwhile. These results indicate the success of our efforts to use this teacher training program as a prevention program to promote social competence in a culturally diverse and socioeconomically disadvantaged population. It is also noteworthy that our training provided both the Head Start teachers and the family support workers with the skills to continue the intervention in future years, thus providing a model for sustained change.

The findings of our study corroborate the classroom findings of a recent study of kindergarten children identified with high levels of aggressive, hyperactive, and impulsive behavior (Barkley et al., 2000). Barkley et al. found that classroom treatment produced significant improvements in teacher reports of social competence and independent observations of aggression in the classroom. However, that study did not find experimental effects of parent training on parenting behaviors, parent reports of behavior problems, or observations of parent–child interactions at home. The authors hypothesized that failure to find changes in these home variables were likely due to poor parent attendance and low motivation (or readiness to change). They concluded that school-based parent programs are ineffective at reaching and assisting families with children with behavior problems. Similar results and conclusions were reported in another community-based parent program (Cunningham, Bremner, & Boyle, 1995). Our findings with the subsample of highest risk children and parents contradict the findings of these two studies and suggest the contrary. We found clinically significant reductions in both the highest risk experimental children and the highest risk experimental mothers when compared to control. In fact, based on our find-

ings, we believe that school-based parent programs may be an immensely useful way of offering treatment to families of children with behavior problems and intervening with parents who display high levels of harsh and critical parenting. We hypothesize that our method of delivering the parenting program in the schools (not in a medical center as in the Barkley et al. study) and inviting all parents to participate (not just parents with children with behavior problems) led to less stigma and higher attendance. Certainly the motivation and readiness to change was high as evidenced by the high consumer satisfaction and the fact that over 51% of these Head Start mothers (all at high-risk because of low socioeconomic status) came to more than six groups in the first year, and 56% came back for booster sessions the following year. Over 95% reported overall positive feelings about the parenting program. Moreover, experimental families who remained in the study were those who experienced more stress at home and had children with more behavior problems. This attests to the motivation of these parents to help their children and to participate in a parenting program.

The results regarding another protective factor—that is, parent–teacher—bonding were less clear-cut. At postassessment, there was a significant effect of intervention on parent–teacher bonding, but this difference was not maintained 1 year later and, in fact, the parents in the control group showed slightly more school bonding than those in the experimental group. It is possible that this finding is due to differences in the experimental and control samples. We know that experimental families showed significantly less school bonding at baseline, indicating that they were more reluctant to interact with their children's teachers and schools. Our immediate posttest analyses indicate that the experimental families showed higher levels of bonding than control families. However, perhaps when these experimental parents were faced with a new teacher and new school, they were unable to make the connections needed in this new setting. These results are not altogether surprising because our training program during the Head Start year included teachers and actively encouraged them to make the first invitations to form parent–teacher partnerships. Teachers were asked to continue attempting to involve even the most reluctant parents. In the kindergarten year, however, there was no teacher intervention. Head Start parents who had become accustomed to the nurturing environment of Head Start and the high level of teacher-initiated involvement may have felt somewhat abandoned. Although our booster sessions encouraged parents to make contact with their children's teachers, in the absence of teacher-initiated contact, these parents may have been reluctant to make the first move. These findings have implications for alerting kindergarten teachers to the need to provide additional support for disadvantaged families and to actively encourage their participation.

Several limitations of this study are worthy of discussion. The first concerns the generalizability of the findings. Because we involved only 50% of the families enrolled in Head Start, we are unable to generalize these findings to all Head Start families. It is possible that families who did not participate in the project were more stressed than parents who did; however, our demographic information showed high levels of risk factors for those who were involved in the study. Delivering an intervention that significantly reduces delinquency risk factors to even 50% of this high-risk population seems a worthwhile contribution. Although further work should be done to determine the best ways to engage even more parents, the clinically significant impact of this intervention on the families that were involved should not be overlooked. It is notable that enrollment numbers in this project are substantially lower than our prior study. Since our last study, the welfare-to-work reform was enacted, and this reduced families' flexibility and impacted their ability to attend group sessions. Most families who did not participate cited work demands, scheduling difficulties, and employment training as the reason for not attending but reported interest in participating if the program had fit with their (often changing) schedules. For these programs to be available to all families, it may be necessary to offer flexible home-based interventions in addition to group-based training and to develop other strategies such as computer-based programs in the workplace and schools. With more flexibility, parent training can provide parents with the knowledge, control, and competence they need to cope effectively with the stresses of parenting under conditions of poverty.

A second limitation concerns the nonequivalence of the experimental and control groups with regard to minority status and some other baseline risk factors, despite randomization procedures. Although we attempted to match centers for ethnicity and risk factors, because we randomly assigned at the school level, this matching was difficult. Families in the experimental group reported significantly more risk factors than control families, and the experimental group contained a higher percentage (60%) of minority families than the control group (46%). Our findings suggest that the program is effective with minority families. Our sample is not large enough to allow analyses by ethnicity, but we have combined samples from our two Head Start studies to look at program effectiveness by ethnic group. Preliminary analyses indicate that the intervention is effective and acceptable across Asian, Hispanic, and African American subgroups (Reid & Webster-Stratton, in press). It is also noteworthy that, at baseline, experimental moth-

ers reported higher stress levels and more child behavior problems than control mothers. In addition, differential dropout occurred such that more stressed mothers seemed to stay in the experimental groups but drop out of the control group. In other words, the experimental condition seemed to attract families who were stressed by life events and child behavior problems whereas the control group had difficulty attracting and retaining these families. Because the control condition did not offer a comprehensive mental health intervention, stressed control families may have seen little value in signing up for or continuing with assessments that perhaps added to their stress without offering services in return.

In summary, our findings with a relatively brief integrated parent and teacher intervention programs suggest the utility of such programs in strengthening protective factors (parenting competence, children's social skills, home–school involvement, and a positive classroom environment) as a strategy for preventing conduct problems. Not only was the intervention effective in the general Head Start population, but experimental children in the high-risk or clinical range at baseline showed significantly greater reductions in behavior problems than control children, thus reducing child risk factors. Future research of such programs should also include a cost-benefit analysis, for it would be useful to know the costs of additional training for teachers and parent training services. We believe that Head Start holds the potential for providing one of the most efficient and cost-effective service delivery methods for gaining access to large numbers of high-risk families with children who can benefit from early mental health intervention. However, the transition from Head Start to kindergarten did result in a deterioration in the positive effects obtained from the intervention**.** These data suggest that such interventions need to be broadened and extended beyond Head Start, offering parent support and teacher training for high-risk families throughout the primary grades. We hypothesize that comprehensive parent and teacher training programs spanning preschool through the early school grades and at critical transition phases (e.g., transition to middle school) will offer even greater potential for reducing conduct problems and preventing delinquency and substance abuse in later years.

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