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Parenting Through Change: An Effective Prevention Program for Single Mothers

Marion S. Forgatch and David S. DeGarmo
Oregon Social Learning Center

This randomized experimental prevention study (a) evaluated the effectiveness of a parent-training program in a sample of 238 divorcing mothers with sons in Grades 1–3 and (b) provided an experimental test of coercion theory. The intervention produced reductions in observed coercive parenting, prevented decay in positive parenting, and generally improved effective parenting practices in comparisons of mothers in experimental and control groups. Moreover, coercion theory was supported. Improved parenting practices correlated significantly with improvements in teacher-reported school adjustment, child-reported maladjustment, and mother-reported maladjustment. The intervention indirectly benefitted child outcomes through improved parenting practices for a model based on child report and, to a lesser extent, on teacher report. The intervention did not produce direct effects on child outcomes.

Children from divorced families are at risk for diverse short- and long-term negative outcomes. Problems include difficulty with externalizing behaviors, academic performance, peer relationships, depression, and anxiety (e.g., Chase-Lansdale, Cherlin, & Kiernan, 1995; Hetherington, 1992; Zill, Morrison, & Coiro, 1993). Prospective longitudinal studies have found that (a) most youngsters from divorced families develop normally, (b) some youngsters have problems before separation that continue after the divorce, and (c) some youngsters develop new problems following divorce (Amato & Booth, 1996; Block, Block, & Gjerde, 1986; Chase-Lansdale et al., 1995; Cherlin et al., 1991; Furstenberg & Teitler, 1994; Shaw, Emery, & Tuer, 1993). A current focus of divorce research is the identification of processes that account for these differences in child adjustment (Furstenberg & Seltzer, 1986).

Coercion theory specifies a set of parenting practices that are presumed to shape children's behavior and contribute to short- and long-term adjustment outcomes (Patterson, Reid, & Dishion, 1992). These parenting practices (i.e., discipline, positive involvement, monitoring, and problem solving) are also at risk for disruption in divorced families (Anderson, Lindner, & Bennion, 1992; Brody, Neubaum, & Forehand, 1988; Capaldi & Patterson, 1991; DeGarmo & Forgatch, 1999; Peterson & Zill, 1986; Vuchinich, Vuchinich, & Wood, 1993). Cross-sectional and longitudinal studies using multiple methods of assessment that included direct observation with divorced samples have found moderate to strong paths from ineffective parenting to children's adjustment problems (Anderson, Hetherington, & Clingempeel, 1989; Fauber, Forehand, Thomas, & Wierson, 1990; Forgatch & DeGarmo, 1997; Forgatch, Patterson, & Ray, 1996; Hetherington, Stanley-Hagan, & Anderson, 1989; Simons, Beaman, Conger, & Chao, 1993). Taken together, these findings support the hypothesis that parenting problems may be causal mechanisms for the development and maintenance of child deviancy in divorced families. However, because these data were obtained from passive longitudinal studies and were therefore correlational, cause-and-effect relations cannot be disentangled.

A plausible way to test the status of a putative causal mechanism is to manipulate the mechanism within an experimental longitudinal study. This genre of experiment requires that several conditions be met (Coie et al., 1993; Durlak & Wells, 1997; Forgatch, 1991; Kazdin, 1993; Kellam & Van Horn, 1997; Kessler & Price, 1993). First, of course, such studies must use controlled, randomized designs. Second, the intervention must be based on a clearly specified theory that articulates a putative causal mechanism. Third, the intervention must produce change in the hypothesized mechanism and the more distal outcome. Fourth, change in the mechanism must correlate with change in the distal outcome. Fifth, adequate statistical power is required to detect differences between experimental and control conditions. Finally, multiple-method measurement should be used to assess the mechanisms and outcome variables. These procedures can be conducted using either prevention or clinical trials.

It is important to note that there are subtle differences between clinical and prevention trials. In clinical trials, the sample is screened to ensure that participants are reasonably homogeneous with respect to diagnosed problems. Prevention trials use samples that are heterogeneous in the topography and intensity of problem behaviors (Coie et al., 1993). Clinical trials are designed to reduce specific symptoms (Kazdin, 1993). Prevention programs address multiple goals: (a) to ameliorate existing problems, (b) to prevent the development of new problems, (c) to prevent the decay of existing prosocial behavior, and (d) to promote new prosocial development (Coie et al., 1993). Prevention trials require a great deal of power (larger samples) and relatively long follow-up

Marion S. Forgatch and David S. DeGarmo, Oregon Social Learning Center, Eugene, Oregon.

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Correspondence concerning this article should be addressed to Marion S. Forgatch, Oregon Social Learning Center, 160 East 4th Avenue, Eugene, Oregon 97401. Electronic mail may be sent to marionf@oslc.org.

periods to achieve effects (Goldklang, 1989). Furthermore, effect sizes for the distal variables are likely to be smaller than in clinical trials (Durlak & Wells, 1997). Because of the homogeneity, singularity of purpose, and intensity of the treatment, greater effects can be achieved with smaller samples in clinical trials. In prevention studies that use risk samples to test interventions, the type of risk is also a critical factor. Divorce places boys at risk for many troubles, not just one (e.g., academic failure, peer relationship problems, externalizing behavior, and internalizing problems). Furthermore, most youngsters from divorced families are likely to escape these problems. Thus, the challenge to achieve positive child outcomes with a divorce sample is quite daunting.

The present report describes an experimental test of coercion theory in a controlled, randomized prevention design with a sample of divorcing families. The parenting practices targeted for intervention were discipline, positive involvement, monitoring, problem solving, and skill encouragement (Forgatch & Patterson, 1989; Patterson & Forgatch, 1987). Longitudinal analyses using multiple-method assessment and path models have shown these parenting practices to be important predictors of a wide range of child adjustment problems. These negative outcomes include antisocial behavior, poor academic performance, deviant peer association, delinquency, depressed mood, and anxiety (Capaldi, 1992; Capaldi & Patterson, 1991; Conger, Patterson, & Ge, 1995; DeBaryshe, Patterson, & Capaldi, 1993; DeGarmo, Forgatch, & Martinez, 1999; Dishion, Andrews, & Crosby, 1995; Forgatch et al., 1996; Patterson, 1997). An experimental test of coercion theory would require altering parenting practices, which in turn would benefit these child outcomes.

The present study was conducted with a sample of 238 recently separated single mothers of sons in Grades 1–3. Mothers were randomly assigned to either an experimental or a no-intervention control condition. Parenting practices were assessed through direct observation of mother–child interactions in the laboratory. Measures of child adjustment were based on ratings provided by teachers, children, and mothers.

The hypotheses evaluated (a) the effectiveness of the intervention at proximal and distal levels and (b) provided a test of coercion theory. The first set of hypothesizes required improvement for the experimental condition relative to control condition, in the parenting practices (proximal effects) and the child adjustment variables (distal effects). The second set of hypotheses required that benefits to boys' adjustment be produced through the positive effects of the intervention on the parenting practices. These hypotheses were evaluated using process models. Hypotheses were tested with a general linear model (GLM) repeated measures multivariate analysis of variance and structural equation models.

METHOD

Participants

Two hundred thirty-eight recently separated single mothers and their sons were recruited from a medium-sized city in the Pacific Northwest through media advertisements, flyers distributed throughout the community, and divorce court records. In eligible families, mothers had been separated from their partner within the prior 3 to 24 months, resided with a biological son in Grades 1–3, and did not cohabit with a new partner. The sample was restricted to boys because they are more likely than girls to exhibit adverse effects of divorce as preadolescents (Guidubaldi & Perry, 1985; Hetherington, 1991).

Most mothers had been married at least once (92%); 77% were separating from the focal boy's biological father, and 14% were not married to the person from whom they were separating. At baseline, mothers had been separated for an average of 9.2 months. Mothers' mean age was 34.8 years (SD = 5.4; range = 21.4 to 49.6); boys' mean age was 7.8 years (SD = 0.93; range = 6.1 to 10.4). The racial/ethnic composition of the boys in the sample was 86% White, 1% African American, 2% Latino, 2% Native American, and 9% from other minority groups. This approximated the racial distribution in the community. The mean annual family income was $14,900, which was similar to that reported for other female-headed households with children in the county (i.e., $15,300; U.S. Department of Commerce, Bureau of Census, 1993). Seventy-six percent of the families were receiving public assistance. Families tended to be small, with 2.1 children on the average.

Mothers were fairly well educated and working, although their jobs were within the lower ranges of occupational status. Most mothers had some academic or vocational training beyond high school (76%), although only 17% had completed a 4-year college degree or higher. Approximately 20% of the women completed their education with high school graduation; 4% had not completed high school. The mothers' job classifications (Hollingshead, 1975) were as follows: 32% unskilled, 21% semiskilled, 23% clerical/medium skilled, 22% minor professional to medium business, and 3% major business/major professional.

Study Design

The study used an experimental longitudinal design with a sample of recently separated mothers and their sons (Grades 1–3). Families were assigned randomly, with approximately two thirds to the experimental group (n = 153) and one third to the no-intervention control group (n = 85).[1] Mothers in the experimental group were invited to participate in the intervention; families in the control condition received no intervention. Experimental- and control-group families participated in assessments on the same schedule.

Participant families received extensive multiple-method, multiple-setting, and multiple-agent assessment at baseline, 6 months, and 12 months. At the 6-month assessment, experimental-group families completed the intervention, although 4 to 6 weeks may have transpired between termination and the assessment. Teacher report data were collected annually at baseline and at 12 months.

Intervention Procedures

The intervention consisted of a series of parent group meetings held weekly in the early evening hours at the Oregon Social Learning Center (OSLC). Child care and meals were provided during meetings for mothers and their youngsters, and transportation was available if needed. The program required 16.4 weeks to complete. The first 4 parent groups participated in a 16-session program. The program was then condensed into 14 sessions. Of the 13 parent groups, 31% were exposed to the 16-session program and 69% to the 14-session program. Parent groups ranged in size from 6 to 16 (M = 9.5). Mothers in the experimental group participated in an average of 8.5 sessions (SD = 5.7; range = 0–15).

In addition to the group meetings, interventionists made midweek telephone calls to encourage use of the procedures and to troubleshoot problems with the weekly home practice assignments. The midweek call has long been a standard procedure in behavioral programs (Forgatch & Toobert, 1979; Patterson, Reid, Jones, & Conger, 1975).

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[1] The unequal assignment to groups was done to provide sufficient n within the experimental group to study intervention implementation (Vinokur, Price, & Caplan, 1991).

When mothers missed regularly scheduled meetings, they were encouraged to catch up by attending another group's meeting, having an individual session, or discussing the material by telephone. Sixteen mothers (10%) had at least one individual session at the center. Of these, 12 came for one catch-up session, 2 for two catch-up sessions, 1 for four sessions, and 1 for six sessions. The 2 mothers with multiple individual sessions had serious problems that required personalized attention (e.g., death in the family, severe depression, and emotional distress from being stalked or raped).

Intervention

The intervention program is fully described in the manual *Parenting Through Change* (Forgatch, 1994). The manual contains information for group leaders and materials for mothers. In the leader manual, each session is detailed with an agenda, objectives and rationales, procedures, exercises and role-plays, and group process suggestions. Parent materials include summaries of principles, home practice assignments, charts, and other necessary materials. The program also includes a 30-min videotape, *The Divorce Workout* (Forgatch & Marquez, 1993), which shows three families using effective parenting practices to help their children adjust to the divorce transition.

Sessions provided training in parenting practices (e.g., noncoercive discipline, contingent encouragement, monitoring, and problem solving) and other issues relevant to divorcing women (e.g., regulating negative emotions and managing interpersonal conflict). The program integrated multiple skills. In Session 1 ("Working Through Change"), mothers were introduced to each other and the program. Session 2 ("Encouraging Cooperation") taught parents to provide children with effective directions (e.g., clear, firm, and respectful) to increase compliance. Session 3 ("Teaching Through Encouragement") detailed ways to promote prosocial behavior (e.g., cooperation, schoolwork, and chores) with skillful teaching techniques and contingent positive reinforcement. In Sessions 4 and 5 ("Setting Limits" and "Following Through," respectively), mothers learned noncoercive discipline strategies (e.g., time-out, work chores, and privilege removal). Sessions 6 and 12 ("Promoting School Success" and "Building Skills," respectively) emphasized the use of positive involvement and reinforcement for school-related and other prosocial behavior (e.g., regular study or practice times). Session 7 ("Communicating With Children") taught communication skills. Sessions 8 and 9 ("Observing Emotions" and "Managing Emotions," respectively) focused on mothers' own emotional experience and that of others. Session 10 ("Problem Solving") taught specific skills for negotiating and resolving interpersonal problems. Strategies learned in the prior 3 sessions were applied in Session 11 ("Managing Conflict"), which emphasized ways to deal with conflict situations with adults (e.g., ex-spouses and coworkers) and with children. Session 13 ("Monitoring Children's Activities") introduced ways to track children while they were away from home (e.g., at school, with friends, and at child care). Finally, Session 14 ("Balancing Work and Play") reviewed the entire curriculum and emphasized the value of maintaining an adult life.

Interventionists

The interventionists were eight women with varied educational training and professional experience. Three interventionists had PhDs, two had master's degrees, one had some college education, and two had high school diplomas. Experience using the OSLC parent-training model ranged from 0 to 20 years. Teams of two interventionists (one experienced and one less experienced) led the groups. The more experienced interventionist was responsible for the conduct of the group and provided some supervision to her coleader.

With the exception of two PhD-level interventionists who each had a minimum of 15 years of OSLC experience, all interventionists participated in a 2- to 4-month structured training program, depending on previous experience. Training time was approximately 4 hr per week. Trainees read relevant materials, viewed videotapes, participated in role-plays, and attended lectures. Finally, they conducted pilot groups that were videotaped to permit supervision and evaluation of intervention implementation.

Intervention Integrity

Immediately following each session, group leaders completed forms to evaluate adherence to the curriculum and quality of delivery. One item evaluated adherence to session agenda. The question used a 4-point scale (1 = *0%–25%*, 2 = *26%–50%*, 3 = *51%–75%*, 4 = *76%–100%*) and asked, "For the whole session, how much of the curriculum was covered?" Aggregating across sessions and controlling for groups, we found that the mean, 3.78 (SD = 0.24), indicated that the agenda was covered. The percentage of agreement between the leader and coleader on this measure was 89%.

We measured quality of each group session, which consisted of three items ("quality of the session," "quality of the group process," and "management of the group"), on a scale ranging from 1 (*excellent*) to 7 (*terrible;* α = .73). Quality was scored for the group leader, the cofacilitator, and an additional cofacilitator when present. Because each interventionist rated her own session management, interrater agreement could not be calculated. Overall, the groups leaders rated the quality of the group process high (M = 2.56, SD = 0.83; M = 2.48, SD = 0.74; and M = 2.30, SD = 0.63, respectively).

Several steps were taken to ensure fidelity to the intervention. The director of the program (Marion S. Forgatch) viewed approximately 50% of the videotapes and conducted 2-hr supervision meetings weekly. During supervision, videotapes were discussed in terms of adherence to the program and competent implementation of the procedures. Interventionists also viewed and discussed each other's tapes for these purposes. The use of standardized materials and the provision of close monitoring on a weekly basis resulted in adequate intervention integrity.

Maternal Ratings of Intervention

Mothers rated their experiences within group sessions at the end of the meeting each week using an 11-item (α = .93) scale ranging from 1 (*not at all*) to 5 (*very much*). Sample items were "The leaders encouraged group participation," "I actively participated," "I felt accepted by other group members," "I paid careful attention," "Group leaders seemed to understand me," "The information presented was helpful," and "I enjoyed today's group." Mothers rated their completion and use of the group homework assignments on a 5-item (α = .97) scale ranging from 1 (*not at all*) to 5 (*extremely*). Sample items included "Last week's home practice was worthwhile," "I did last week's homework," and "My children responded well to my use of the home practice."

Assessment Procedures

We conducted multiple-informant, multiple-method assessments, which included structured interviews with mothers and children, observations of mother–child interactions in the laboratory, and questionnaires. Mothers and children signed informed consents. Each participant was paid approximately $10 per hour for time spent in assessment. Data in this report are from assessments at baseline, 6 months, and 12 months.

Observations of mother–child interactions were obtained in the laboratory during eight structured interaction tasks (SIT) that lasted 45 min. There were four mother–son problem-solving discussions about current hot conflicts (5 min each), a teaching task (10 min), an unstructured activity (5 min), a situation during which the mother directed the child not to play with attractive toys in the room (5 min), and a time for refreshments (5 min).

The SIT was videotaped and scored using the Interpersonal Process Code (IPC; Rusby, Estes, & Dishion, 1991). The IPC system has 13 codes and is scored in real time using computers that provide information on

respondent and recipient, sequence, content, affect, context, and duration. In the IPC, aversive behaviors are those scored as negative either in content (e.g., refusal or criticism) or in affective tone (e.g., hostile or sad). Positive behaviors are either (a) positive in content (e.g., positive interpersonal or endearment) with neutral or positive affect or (b) neutral in content (e.g., talk) with positive affect (e.g., happy or caring). Following the scoring of the microsocial sequences of behavior, coders rated more global aspects of the processes they observed using the "Coder impressions of ODS Lab tasks" (Forgatch, Knutson, & Mayne, 1992). Ratings were made following each of the eight tasks or settings in which the family participated.

Intercoder agreement was adequate for both content and affect. Approximately 15% of the interactions were scored for intercoder reliability at each wave. The mean percentage of agreement between coders for observations at baseline, 6 months, and 12 months was .87 for content and .89 for affect. The respective mean kappas were .76 and .64.

Measures

Parenting Practices

Two measures were based on the microsocial dimension of the IPC scored from the full 45 min of the SIT: negative reinforcement and negative reciprocity. The other parenting measures (i.e., positive involvement, skill encouragement, and problem-solving outcome) were based on the global ratings of the IPC. In the descriptions below, relevant reliabilities are reported, respectively, for baseline, 6 months, and 12 months.

Negative Reinforcement

This measure was based on conflict bouts, which involved an exchange of aversive behaviors between mother and son. Negative reinforcement was defined as frequency of conflict bouts initiated by the mother that were terminated by the child. Bouts began when the mother introduced an aversive behavior following a period of at least 12 s of interaction without aversive behavior by either party. For an interaction to be scored a conflict bout, the son had to respond to the mother's aversive behavior with one of his own within 12 s. The bout ended when the child's aversive behavior was followed by 12 or more seconds without aversive behavior by either party. For example, the mother gives the child a command, the child shouts a refusal, the mother withdraws the command, and the interaction becomes neutral. In this sense, the child escapes the aversive situation provided by the mother by introducing his own aversive behavior, which results in the mother backing down, thereby negatively reinforcing the boy's use of aversive behavior. Frequently occurring bouts such as this are presumed to become overlearned and generalize to other social settings (Patterson, 1982). The intraclass correlation coefficients (ICCs) of coder agreement were .77, .57, and .49, respectively.

Negative Reciprocity

This sequential score was measured with the Haberman binomial z score (Gottman & Roy, 1990). This measure reflects the conditional likelihood that the mother reciprocated the child's aversive behavior with an aversive behavior of her own. ICCs were .65, .79, and .55, respectively.

Positive Involvement

This scale score was obtained from global coder ratings made following each of the eight SITs. Likert scale items included "warm," "empathetic," "encouraging," "affectionate," and "treated child with respect." Cronbach alphas were .76, .89, and .92, respectively; ICCs were .83, .91, and .81, respectively.

Skill Encouragement

This scale score was based on global ratings of mothers' ability to promote child skill development through contingent encouragement and scaffolding strategies observed during the 10-min teaching task. The measure is composed of 11 Likert scale items (e.g., "breaks task into manageable steps," "reinforces success," "prompts appropriate behavior," and "corrects in a nonaversive way"). Cronbach alphas were .78, .73, and .81, respectively; ICCs were .73, .66, and .66, respectively.

Problem-Solving Outcome (PSO)

This scale score was based on global coder ratings of the overall outcome of each problem-solving discussion accomplished by the dyad. There were three mother-identified topics and one child-identified topic. The PSO score consists of nine Likert scale items (e.g., "solution quality," "extent of resolution," "likelihood of follow through," and "apparent satisfaction"). Mother PSO is the mean of the dyad's score for the three mother-identified topics; child PSO is the dyad's score for the one child-identified topic. Cronbach alphas were as follows: for mother PSO, .91, .90, and .89, respectively; for child PSO, .87, .71, and .91, respectively. ICCs were as follows: for mother PSO, .76, .81, and .76, respectively; for child PSO, .87, .71, and .91, respectively.

Child Adjustment Variables

Teachers, boys, and mothers assessed child adjustment. Boys and mothers provided data at baseline, 6 months, and 12 months. Teachers provided ratings at baseline and at 12 months. Teachers were unaware that families were participating in an intervention study, and teachers were never the same at any two assessments.

Teacher Report

Externalizing. This measure was the externalizing T score from the Teacher Report Form (TRF; Achenbach, 1991). The Externalizing scale includes 34 items, which were rated on a 3-point scale ranging from 1 (*not true*) to 3 (*very true*) reflecting negative behaviors (e.g., argues, talks back, and gets in fights). Cronbach alphas were .89 and .94, respectively.

Prosocial behavior. We measured prosocial behavior using a 20-item scale from the Chedoke-McMaster Teacher Questionnaire (Boyle, Offord, Racine, & Fleming, 1993). The scale includes a range of prosocial and peer-related behaviors (e.g., fair in games, shares, helps others, and is considerate). Cronbach alphas were .93 and .95, respectively.

Adaptive functioning. This measure was the adaptive functioning T score from the TRF. Teachers were asked to compare the youngster to typical pupils of the same age on four items using a 7-point scale. Items were "How hard is he working?" "How much is he learning?" "How appropriately is he behaving?" and "How happy is he?" Cronbach alphas were .88 and .87, respectively.

Boy Report

Depressed mood. This variable was measured with the Child Depression Inventory (CDI; Kovacs, 1985), a 27-item symptom-oriented summative index (e.g., "I am sad," "nobody loves me," and "I feel alone"). Cronbach alphas were .81, .83, and .76, respectively.

Peer adjustment. We measured loneliness and dissatisfaction with peer relations on a 16-item scale (Asher, Hymel, & Renshaw, 1984). Sample items included "I have nobody to talk to," "I don't have any friends," and "It's hard to get other kids to like me." Cronbach alphas were .87, .85, and .85, respectively.

Mother Report

Externalizing. This measure was the Externalizing scale *T* score for the parent report form of the Child Behavior Checklist (CBCL; Achenbach, 1992), which consists of 33 items (e.g., argues, fights, and swears). Cronbach alphas were .89, .90, and .90, respectively.

Anxiety. This scale score measured mothers' report of child anxiety using four items from the CBCL (e.g., nervous high strung, fearful, anxious, and worrying). Cronbach alphas were .68, .61, and .70, respectively.

Depressed mood. This seven-item scale measured mothers' report of child's depressed mood from two questionnaires. Five items were from the CBCL (e.g., sad/depressed, feels worthless/inferior, and feels no one loves him); two items were from the Chedoke-McMaster Teacher Questionnaire on child well-being (i.e., feels hopeless and not as happy as other children; Boyle et al., 1993). Cronbach alphas were .82, .82, and .79, respectively.

Exogenous Predictors

Group Assignment

This variable was a dichotomous variable that indicated random assignment to the experimental group (coded 1 for experimental and 0 for control).

Socioeconomic Status (SES)

This control variable used information from the Hollingshead Four Factor Index of Social Status (Hollingshead, 1975). The SES variable was the mean of the standardized occupational and educational scores.

RESULTS

Analytic Strategy

Data analyses were performed in several steps. We first conducted an attrition analysis on the main study variables. We then tested effects of the intervention on the parenting and child variables. Finally, we conducted path analyses to test process hypotheses concerning the predictors of child adjustment. Intervention effects were tested with a GLM repeated measures analysis of variance (ANOVA) using SPSS (Statistical Package for the Social Sciences) 8.0. Two advantages of GLM repeated measures analysis are the ability to estimate effects for unbalanced designs (e.g., unequal *ns* for group factors) and the ability to examine multiple dependent variables. The path analyses were conducted with structural equation modeling (SEM) using the Amos program (Arbuckle, 1997).

In testing the hypotheses, we had clear expectations for the direction of effects specified in the experimental design of the present study. The hypotheses were based on findings from an earlier passive longitudinal study of divorce (Oregon Divorce Study; ODS–I) and from the baseline data of ODS–II, which specified certain parenting practices as predictors of child adjustment. The intervention in the experimental study (ODS–II) was designed to improve parenting skills of the mothers, thereby preventing and ameliorating adjustment problems for children of divorce. Therefore, the tests for intervention effects were set at one-tailed alpha levels for the directional hypotheses concerning the impact of the intervention and at two-tailed alpha levels for the control variable (see Aron & Aron, 1994, pp. 168–176, for a discussion).

Attrition Analysis

In the first step, we conducted an analysis of participant attrition (Wolchik et al., 1993). This analysis evaluated (a) differential attrition by group status that might bias results of an intervention effect and (b) any main attrition effect that might limit generalizability of findings for divorcing families. By 12 months, 28 families of the 153 assigned to the experimental condition did not participate, for an attrition rate of 18%. In the control condition, 15 of the 85 families did not participate, also for an attrition rate of 18%. There were no significant differences in the attrition rate by group, $\chi^2(1, N = 238) = 0.016$, $p = .90$). Therefore, the intervention had no impact on differential attrition in the sample.

Next, we conducted a series of two-way ANOVAs (Group Status × Attrition Status) on SES and the parenting variables at baseline. There were no Group Status × Attrition Status effects for SES, negative reinforcement, negative reciprocity, positive involvement, skill encouragement, parent problem solving, or child problem solving. Examining main effects for attrition, regardless of group condition, we found differences for SES and negative reinforcement. Those mothers who did not participate in the study at 12 months scored higher on baseline negative reinforcement than did those who continued participation ($M = 2.93$ and 1.63, respectively), $F(1, 234) = 4.34$, $p < .05$, and they were of lower SES ($M = -0.43$ and 0.01, respectively), $F(1, 234) = 14.12$, $p < .001$.

In sum, there were no differential rates of attrition for the experimental group compared with the control group on the outcome variables. Therefore, attrition should not bias intervention effects on parenting outcomes. Lower SES mothers and more coercive mothers were less likely to participate at 12 months, a finding consistent with other studies showing socially disadvantaged mothers to be more likely to drop out of intervention programs (Patterson & Chamberlain, 1994). The attrition main effect for negative reinforcement meant that effects of parenting on adjustment might be underestimated because of range restriction in negative reinforcement from attrition.

Intervention Effects

In this section, we evaluated the intervention effects on the more proximal measures of parenting practices and the distal measures of child adjustment. Intervention effects were examined in a GLM repeated measures ANOVA using one-tailed test values.

Supporting the experimental hypothesis, the omnibus multivariate test for a Group × Time effect on the parenting variables produced a significant Pillai's trace statistic, $F(12, 171) = 2.41$, $p < .01$. In general, the experimental group declined in levels of coercive parenting compared with the control group and at the same time showed less decay in positive parenting. The means and standard deviations for the parenting variables are shown in Table 1 by group condition.

A significant Group × Time linear effect was found for negative reinforcement, $F(1, 182) = 8.39$, $p < .001$. The means show that the control-group families steadily increased in negative reinforcement bouts from 1.48 bouts to 2.08, whereas the experimental-group families started at 1.79 bouts, increased to 2.33 bouts at 6 months, then sharply declined to 1.45 bouts at 12 months. At 6 months, both the variances and means were different between the

Table 1
Means and Standard Deviations for Targeted Parenting Practices by Group Condition

Variable and time	Experimental (E) (n = 118)		Control (C) (n = 66)		Significant contrast	Time linear effect $F(1, 182)$	Group mean effect $F(1, 182)$	Group × Time linear effect $F(1, 182)$
	M	SD	M	SD				
Negative reinforcement						0.62	0.66	8.39**
Baseline	1.79	1.88	1.48	1.58				
6 months	2.33	2.22	1.55	1.37	E > C**			
12 months	1.45	1.48	2.08	2.16	C > E*			
Negative reciprocity						1.21	0.12	10.76***
Baseline	1.69	2.30	0.98	1.88	E > C*			
6 months	2.03	2.38	1.94	2.18				
12 months	0.83	1.82	1.41	1.93	C > E*			
Positive involvement						19.80***	0.89	3.84[a]*
Baseline	4.14	0.56	4.15	0.51				
6 months	3.99	0.62	3.95	0.61				
12 months	4.03	0.68	3.84	0.64	E > C*			
Skill encouragement						21.17***	0.55	1.69
Baseline	7.89	1.64	8.01	1.36				
6 months	7.49	1.72	7.28	1.63				
12 months	7.33	1.89	7.01	1.88				
Parent PSO						13.57***	2.09	0.01
Baseline	2.63	0.59	2.54	0.56				
6 months	2.66	0.59	2.54	0.57	E > C†			
12 months	2.80	0.57	2.72	0.55				
Child PSO						1.44	0.65	0.64
Baseline	2.78	0.79	2.76	0.78				
6 months	2.77	0.72	2.74	0.79				
12 months	2.93	0.81	2.78	0.67				

Note. N = 184. PSO = problem-solving outcome. Pillai's trace omnibus multivariate effect, $F(12, 171) = 7.08$, $p \leq .001$, for time and $F(12, 171) = 2.41$, $p \leq .01$, for Group × Time.
[a] Reported at the two-tailed alpha level.
† $p \leq .10$ (marginally significant). * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

experimental and control groups, with a greater variance and greater number of negative reinforcement bouts for the experimental group ($p < .025$). At 12 months, this trend reversed, with the control group having a significantly greater variance and a greater number of bouts. The experimental group also decreased in negative reciprocity over time compared with the control group, $F(1, 182) = 10.76$, $p < .001$. The experimental group's negative reciprocity was significantly higher at baseline (M = 1.69 vs. 0.98) and then significantly lower at 12 months (M = 0.83 vs. 1.41).

Main effects for time were found for prosocial parenting practices. However, some of the positive parenting practices decreased over time, although problem solving increased. No trends were found for child PSOs, whereas the sample as a whole increased in mother PSOs, $F(1, 182) = 13.57$, $p < .001$. Although the sample increased in PSOs, no Group × Time effect was detected for parent or child PSOs.

Interestingly, the sample as a whole decreased in positive involvement, $F(1, 182) = 19.80$, $p < .001$, and skill encouragement, $F(1, 182) = 21.17$, $p < .001$. Because positive involvement and skill encouragement did not change in the expected direction for the intervention group (i.e., improve), the one-tailed directional test of the intervention was not supported for these variables. However, the rate of decline in positive involvement was greater in the control group compared with the experimental group, $F(1, 182) = 3.84$, $p < .05$ (two-tailed). Additionally, the experimental group scored higher on positive involvement at 12 months compared with the control group (M = 4.03 vs. 3.84).

We next conducted visual and statistical tests for parallelism between group slopes to (a) control for initial level differences and (b) to examine any differential effects of the intervention (i.e., a Group × Initial Level interaction; see Brown, 1993). We found no intervention × pretest interactions on the parenting variables. Additionally, initial levels of parenting were controlled for in the path analysis discussed below.

In summary, the intervention hypothesis was supported, showing that the experimental group decreased in coercive parenting practices and showed less decay in one dimension of positive parenting (i.e., positive involvement) compared with the control group. The intervention may have served to prevent some aspects of positive parenting practices from worsening had they run their natural course without an intervention. The intervention produced medium effect sizes on the coercive parenting practices and a small effect size on positive involvement, according to the criterion suggested by Cohen (1977). For the Group × Time effect, η^2 was .04 for negative reinforcement, .06 for negative reciprocity, and .02 for positive involvement.

The means and standard deviations for the child adjustment variables are shown in Tables 2 and 3 by group condition. Separate omnibus multivariate tests were conducted because the teacher data were collected at two time points and the mother- and child-

Table 2
Means and Standard Deviations for Teacher-Rated Child Adjustment Measures by Group Condition

Variable and time	Experimental (n = 112) M	Experimental (n = 112) SD	Control (n = 56) M	Control (n = 56) SD	Time linear effect $F(1, 166)$	Group mean effect $F(1, 166)$	Group × Time linear effect $F(1, 166)$
Externalizing					2.87*	0.66	0.00
Baseline	54.72	11.94	54.73	10.30			
12 months	53.46	10.02	53.42	8.55			
Prosocial behavior					0.36	0.12	0.03
Baseline	1.94	0.47	1.98	0.53			
12 months	1.96	0.47	2.01	0.48			
Adaptive functioning					0.04	0.89	2.13†
Baseline	44.65	8.12	46.14	8.92			
12 months	45.60	7.80	45.41	8.79			

Note. N = 168. Pillai's trace omnibus multivariate effect, $F(3, 164) = 1.12$ for time and $F(3, 164) = 1.06$ for Group × Time.
† $p \leq .10$ (marginally significant). * $p \leq .05$.

reported measures were assessed at three time points. Therefore, the mother and child measures were combined in Table 3.

The more distal child adjustment variables did not show direct effects of the intervention in teacher, mother, or child-rated domains of child adjustment. The multivariate Group × Time effect for the teacher data in Table 2 was not significant, $F(3, 164) = 1.06$, $p > .10$. The univariate Group × Time effects indicated a marginal trend for the teachers' report of adaptive functioning, $F(1, 166) = 2.13$, $p < .10$. The means indicated that the experimental group was slightly lower in adaptive functioning at baseline and improved to the level of the control group by 12 months. There were no cross-sectional mean differences between the groups on the teacher-rated measures.

None of the mother- or child-reported measures of child adjustment showed a significant Group × Time effect at the univariate or multivariate level, $F(10, 147) = 1.01$, $p > .10$. Interestingly, all of the measures showed relative improvement over time, given that all of the univariate F tests showed a significant linear trend. This possibly indicates a steady adjustment to divorce over a 1-year period for both the intervention and control groups as rated by the mothers and their sons. The cross-sectional comparisons of means showed a marginal trend for the boys in the experimental group to

Table 3
Means and Standard Deviations for Child- and Mother-Rated Child Adjustment Measures by Group Condition

Variable and time	Experimental (E) (n = 100) M	Experimental (E) (n = 100) SD	Control (C) (n = 57) M	Control (C) (n = 57) SD	Significant contrast	Time linear effect $F(1, 155)$	Group mean effect $F(1, 155)$	Group × Time linear effect $F(1, 155)$
Peer adjustment (child)						5.71*	0.33	0.82
Baseline	23.91	6.29	23.29	6.12				
6 months	23.28	6.12	22.19	5.59				
12 months	22.12	5.51	22.49	5.93				
Depressed mood (child)						16.73***	0.33	0.81
Baseline	7.13	5.70	7.54	6.13				
6 months	6.28	5.27	7.62	6.82	E < C†			
12 months	5.67	4.92	5.26	4.62				
Anxiety (mother)						4.33**	0.35	0.08
Baseline	0.33	0.33	0.36	0.42				
6 months	0.25	0.33	0.29	0.36				
12 months	0.27	0.37	0.29	0.36				
Depressed mood (mother)						7.31***	0.03	0.55
Baseline	0.42	0.37	0.44	0.46				
6 months	0.31	0.35	0.35	0.36				
12 months	0.35	0.36	0.32	0.35				
Externalizing (mother)						21.49***	0.04	0.06
Baseline	55.04	9.81	55.40	11.29				
6 months	52.13	9.53	52.73	11.17				
12 months	51.86	10.58	51.85	11.04				

Note. N = 157. Pillai's trace omnibus multivariate effect, $F(10, 147) = 5.06$, $p \leq .001$, for time and $F(10, 147) = 1.01$ for Group × Time.
† $p \leq .10$ (marginally significant). * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

score lower on the CDI compared with the boys in the control group at the 6-month assessment, shortly after termination of the intervention (M = 6.28 vs. 7.62).

Path Analysis

In the final step, we tested the hypothesis that improvements in the targeted parenting mechanisms would be associated with improvements in the more distal child adjustment variables using SEM path analysis. We concluded that there were no direct effects of the intervention on child adjustment, contrary to expectations. Therefore, we did not specify tests of mediation. We then specified the path models to test indirect associations of the intervention on child adjustment through the parenting mechanisms.

The first step of the path analysis was to specify latent factors of change using indicators of parenting practices that changed together over time. We computed linear slope scores for the six parenting outcomes and conducted factor analyses on the slope scores. A principal-components factor analysis produced two separate factors, one representing prosocial parenting practices (positive involvement, skill encouragement, and PSO) and the other, coercive parenting practices (negative reinforcement and negative reciprocity). The child PSO obtained a factor loading of .48 on the positive factor and .40 on the coercive factor; therefore, this slope score was eliminated from further analysis. All other slope scores ranged from .65 to .85. For the SEM factor models, we created indicators for prosocial parenting and coercive parenting using factor scores produced from forced single-factor solutions of the respective variables noted above.

For the child adjustment factors, we evaluated the independence of the factors assessing child adjustment. We first ran preliminary principal-components factor analysis on the change variables. The results produced three factors with eigenvalues greater than 1. The factors were defined by reporting agents (i.e., teacher-, child-, and mother-reported dimensions). Previous research has shown problems of obtaining convergence for reporting agents of child outcomes in early development, particularly when mothers are subject to depression (Fergusson, Lynskey, & Horwood, 1993; Fisher & Fagot, 1996). We then modeled a series of SEM confirmatory factor analyses on the dependent variables assessing change. The change in teacher-reported adjustment was correlated with the change in the mother-reported factor ($r = -.26, p < .05$) and with the child-reported factor ($r = -.38, p < .05$). The mother- and child-reported factors of child adjustment were correlated ($r = .51$, $p < .05$). Next, we conducted a confirmatory factor analysis, constraining the factor variances at 1 and the covariances at 1 to specify a one-factor solution. The model did not fit the data, $\chi^2(20, N = 143) = 88.11, p = .00$. Specifying a hierarchically nested three-factor solution fit the data, $\chi^2(17, N = 143) = 8.52, p = .95$, and produced a significant improvement in chi-square, $\Delta\chi^2(3, N = 143) = 79.59, p < .00$. Therefore, we conducted the separate path analyses on teacher-, mother-, and child-rated variables.

The first process model tested the effects of change in parenting on change in school adjustment rated by teachers. The latent variable factor for teacher report of school adjustment comprised externalizing, prosocial behavior, and adaptive functioning. The latent variable change factors for parenting and school adjustment were composed of slope scores. The majority of the missing data in the listwise sample for model analysis was attributable to teacher data, an average of 15% over time. Results are shown in Figure 1 in the form of standardized coefficients.

The model showed good fit to the data, with adequate measurement factor loadings, $\chi^2(38, N = 155) = 38.96, p = .43$. The effects for group assignment and SES on change in effective parenting are on the right-hand side of the model. The intervention predicted increases in effective parenting ($\beta = 0.18$), controlling for SES; baseline levels of effective parenting; and baseline school adjustment. Higher levels of SES predicted increases in observed parenting practices from baseline to 12 months ($\beta = 0.34$). Increases in effective parenting predicted improvement in school adjustment ($\beta = 0.37$), thus supporting the parenting model. The cross-lag paths indicated that baseline levels of effective parenting predicted increases in school adjustment ($\beta = 0.32$). Overall, the model in Figure 1 explained 31% of the variance in teacher-reported school adjustment.

The second model tested the parenting process model for child report of depressed mood and peer adjustment. The results are shown in Figure 2.

The model fit the data, and the hypothesis was supported, $\chi^2(20, N = 187) = 19.88, p = .47$. Controlling for SES, we found that group assignment predicted increases in effective parenting ($\beta = 0.29$), which in turn predicted decreases in boys' maladjustment ($\beta = -0.38$). There were no significant cross-lag relationships for baseline parenting or boy maladjustment. Overall, the model explained 37% of the variance in boy report of maladjustment.

The final model tested the parenting hypothesis for mother-reported boy maladjustment. Specifying the model with a general factor of effective parenting did not support the hypothesis; the standardized path coefficient from change in effective parenting to change in maladjustment was not significant ($\beta = -0.08$). Additionally, some of the fit indexes used to evaluate the model did not demonstrate adequate fit to the data, $\chi^2(38, N = 187) = 82.63, p = .00$. The comparative fit index (CFI) was high and close to 1.00 (.98); however, the p value was less than .05 and the chi-square minimization ratio was greater than 2.00 ($\chi^2/df = 2.17$). Arbuckle (1997) recommended a ratio of less than 2.00 for adequate fit.

We next ran the model separately for the two parenting dimensions. We specified the latent parenting factor as perfectly measured by coercive parenting in one model and prosocial parenting in the other by fixing the measurement loading at 1 with no error variance. Specifying the parenting factor as change in prosocial parenting supported the hypothesis. The results of the final model for mother-reported boy maladjustment are shown in Figure 3.

The prosocial parenting model for mother report of child outcomes showed better fit to the data than a general effective parenting model, $\chi^2(23, N = 183) = 43.72, p = .01$. The CFI was high (.99), and the chi-square ratio was less than 2.00 ($\chi^2/df = 1.90$). Controlling for SES, we found that group assignment predicted improvements in effective parenting ($\beta = 0.16$), which in turn predicted changes in maladjustment ($\beta = -0.18$). The model explained 28% of the variance in maladjustment change.

In the final step of the analyses, we conducted a series of models using a dosage variable for group assignment. We examined a dosage variable for two reasons. First, we wanted to examine the effects of the intervention, controlling for families who were assigned to the experimental condition but who did not participate in the intervention. Second, we tested the indirect effects of group

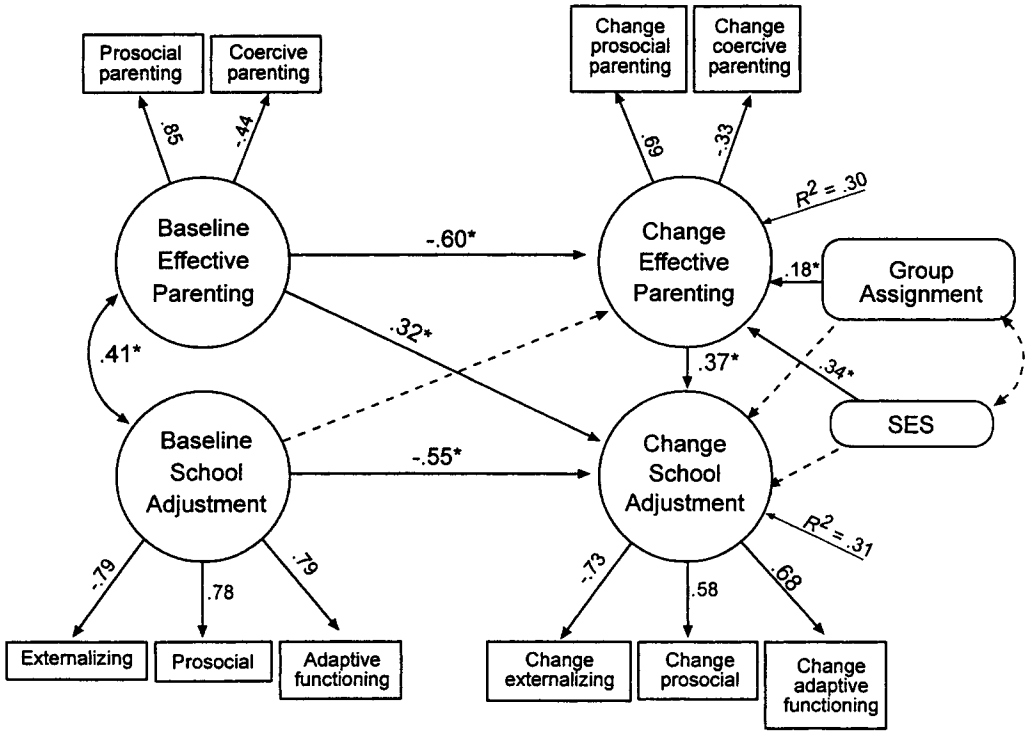

Figure 1. Structural equation modeling process model of parenting mechanism predicting school adjustment reported by teachers, controlling for socioeconomic status (SES). $\chi^2(38, N = 155) = 38.96$, $p = .43$, comparative fit index = 1.00, $\chi^2/df = 1.00$. *$p < .05$.

assignment to change in the distal child outcomes. Tests of indirect influence of the intervention make most theoretical sense for those families that received the intervention. Dosage was coded 0 for the control group, 1 for experimental-group mothers who did not participate, 2 for mothers attending fewer than four sessions, and 3 for mothers attending four or more sessions. From practical experience with the intervention, we decided that the essential components of the parenting curriculum could not be covered with fewer than four sessions.

The results of the dosage models replicated the substantive findings in the models shown above. As expected, each of the models showed stronger prediction from group assignment to change in effective parenting using dosage (β = 0.25, 0.35, and 0.20, respectively, for teacher-, child-, and mother-reported outcomes). The indirect effect of the intervention on change in child outcomes showed a marginal trend for the teacher-reported outcomes (β for the indirect effect = 0.09, $p = .058$) and a significant effect for boy-reported outcomes ($\beta = -0.14, p < .05$). The indirect path was not significant for the model based on maternal report.

Consumer Satisfaction

Mothers provided positive ratings of their group experience each week ($M = 4.24$, $SD = 0.50$), indicating that they tended to participate, felt accepted, and enjoyed the meetings. The mothers' ratings of home practice assignments suggested that they were trying out the procedures and finding them worthwhile ($M = 3.56$, $SD = 0.88$). At completion of the intervention, in ratings about the overall usefulness of the program, 67% of the mothers rated it "very useful," 30% "quite useful," and 3% "somewhat useful." When asked if they would recommend this program to other divorcing mothers, 88% said "very much so," 10% said "quite a lot," and 2% said "somewhat."

DISCUSSION

Divorce is a risk factor for the adjustment of parents and children (Amato & Keith, 1991). With more than half of modern marriages predicted to end in divorce (Bumpass, 1984; Martin & Bumpass, 1989), we need programs that can prevent and ameliorate the problems of divorcing families. In the present study, we tested an intervention program (*Parenting Through Change*) designed to change maternal parenting practices and indirectly to change child outcomes. The intervention was conceptualized as an experimental test of coercion theory.

Three aspects of parenting were affected. Of these, coercive discipline demonstrated the greatest improvement. Over a 12-month period, mothers in the experimental condition reduced their use of negative reinforcement and negative reciprocity, whereas mothers in the control condition increased theirs. In this manner, the intervention seems to have both ameliorated these parenting problems and prevented them from becoming worse. Positive parenting also benefitted from the program. Whereas mothers in both groups showed a decline in positive involvement with their sons over 12 months, experimental-group mothers showed signif-

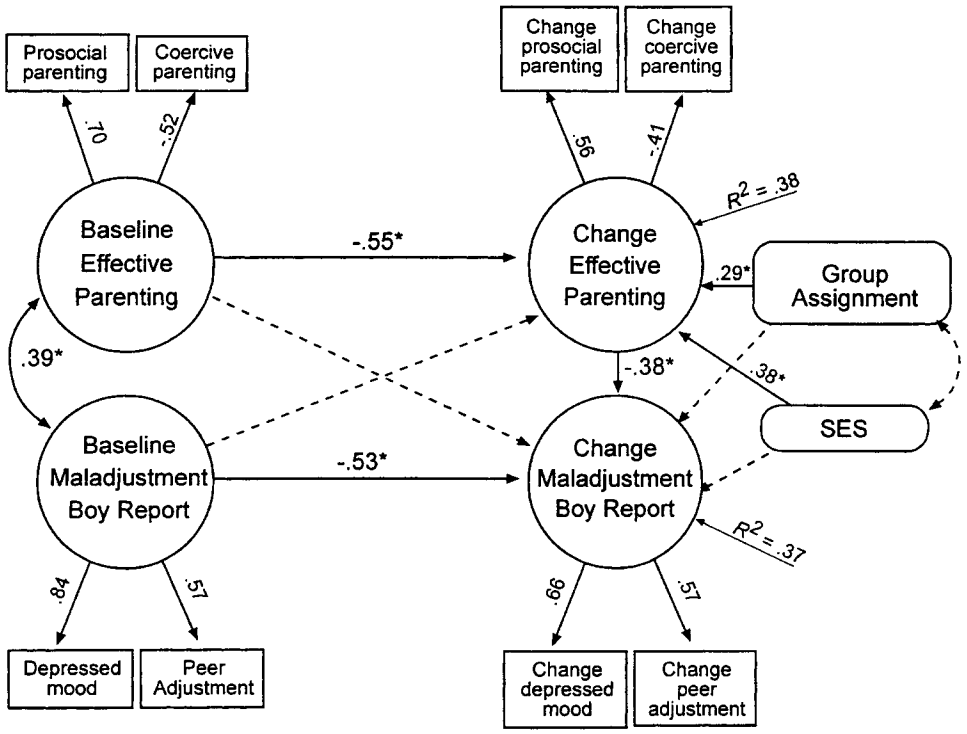

Figure 2. Structural equation modeling process model of parenting mechanism predicting maladjustment reported by boy, controlling for socioeconomic status (SES). $\chi^2(20, N = 187) = 19.88, p = .47$, comparative fit index = 1.00, $\chi^2/df = .99$. $^*p < .05$.

icantly less decline than did control-group mothers. This appears to have prevented the decay of an existing form of positive parenting. We combined five aspects of parenting to form a single-factor construct, which we labeled *effective parenting.* We found that effective parenting improved for mothers in the experimental condition compared with mothers in the control condition in the SEM models, even when controlling for baseline levels of effective parenting and the mothers' SES.

The second goal of the study was to show that change in parenting led to change in child adjustment. SEM path models were performed with three constructs for child outcomes based on different reporting agents. Teachers reported on school adjustment in terms of prosocial behavior, adaptive functioning, and externalizing behavior. Boys reported on maladjustment in terms of depressed mood and peer relationship disruption. Mothers reported on maladjustment in terms of anxiety, depression, and externalizing behavior. In each of the three models, the intervention was associated with improvement in parenting, which in turn predicted improvement in child adjustment. The fact that three different agents noted these changes makes the findings especially noteworthy. We conducted tests for indirect effects, which traced the path from experimental and control groups to change in parenting and from there to change in child adjustment. These indirect paths held for models based on reports by the boys and their teachers. The indirect path for the model based on boy report was significant. The indirect path was marginally significant ($p = .058$) for the model based on teacher report.

In keeping with findings from other prevention studies, the short-term effects for the intervention yielded no direct benefit to child adjustment in the 1st year. Contemporary thinking about universal and selective design in prevention studies leads one to expect this as an outcome. For example, in several studies, there were few short-term changes (Dishion, Andrews, Kavanagh, & Soberman, 1996; Kellam & Anthony, 1998; Kellam, Mayer, Rebok, & Hawkins, 1998; Reid, Eddy, Fetrow, & Stoolmiller, in press; Tremblay et al., 1992). As the follow-up proceeded, there was evidence for change in an increasing spectrum of outcomes. At first glance, such findings seem counterintuitive. However, when viewed from the perspective of the single mother involved in the prevention trial, the child outcome data make a good deal of sense.

In the present study, mothers learned a set of parenting strategies. A key assumption was that each mother would tailor these procedures to fit her child's needs. Presumably, each mother would apply the newly acquired skills to child problems that concerned her and develop her own sequence of application. In this sense, each mother designed a unique course for the intervention to follow for her child. For example, mothers could decide to use an incentive program to promote any of several prosocial behaviors (e.g., schoolwork, sibling cooperation, or chores). Similarly, she could decide to use the discipline strategies to target the problems that most concerned her (e.g., noncompliance, verbal or physical aggression, or rule violation). In her role as change agent, she would continue to apply the techniques to one child problem after another during follow-up. At any given point in time, only a fraction of the mothers would be invested in altering a specific outcome, such as antisocial behavior or school achievement. Over

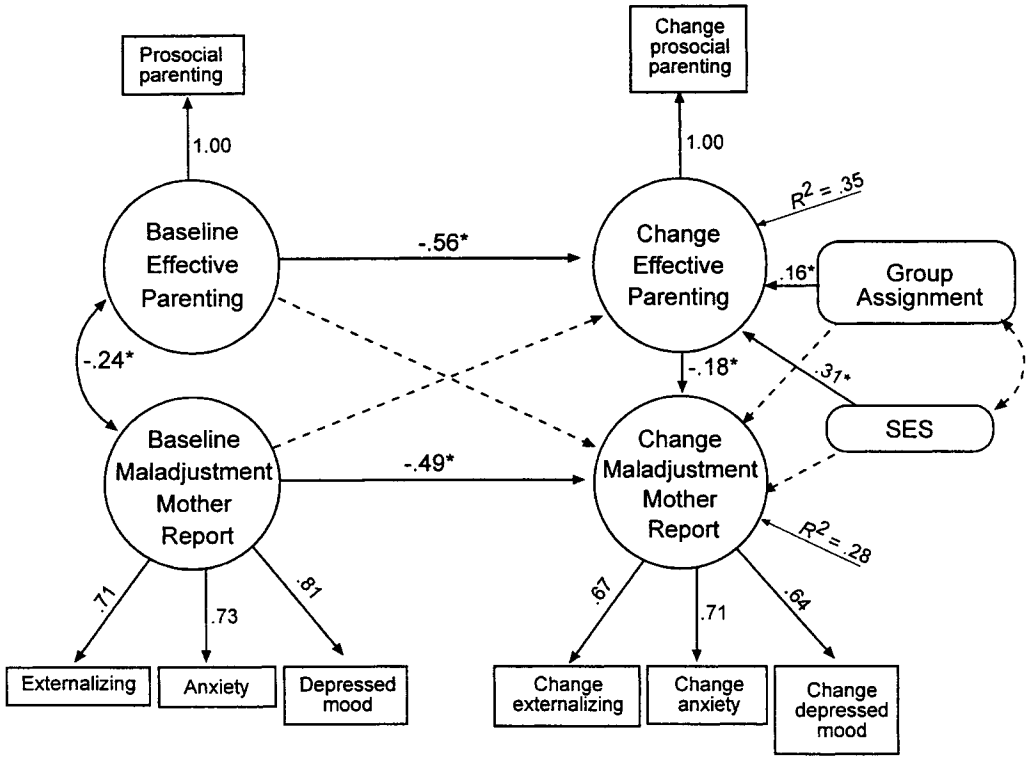

Figure 3. Structural equation modeling process model of parenting mechanism predicting maladjustment reported by mother, controlling for socioeconomic status (SES). $\chi^2(23, N = 183) = 43.72, p = .01$, comparative fit index = .99, $\chi^2/df = 1.90$. $^*p < .05$.

time, each child outcome should accumulate power to approach significance.

To reduce prevalence rates for children's underachievement, internalizing problems, or antisocial behavior in divorcing families, a different design would be required. The present approach used the mother's status as divorcing parent. A better approach may be to target populations of divorcing mothers with children clearly exhibiting difficulty at school or with antisocial behavior problems. The present prevention design may serve as a prelude to more selective programs for divorcing families.

The study featured multiple methods with nonoverlapping methods in adjacent constructs in the SEM models. Parenting was based on direct observation of mother–child interactions; three separate agents reported on child outcomes. Although this measurement strategy leads to effects likely to generalize across diverse samples, it also contributes to smaller effect sizes (Durlak & Wells, 1997). The effects of the intervention on parenting change were moderate to small, and the paths from parenting change to change in child outcomes were moderate at best (.38). Because we achieved the primary goal of altering the parenting practices for the experimental group, we expect that there will be increasing child outcomes that will become significant as follow-up proceeds.

The measurement of parenting practices presented several challenges. One problem emerged with respect to monitoring. In several passive longitudinal studies, monitoring measures for children before preadolescence have demonstrated restricted range problems. Parents tend to report that they supervise young children most of the time. We attempted to overcome this measurement problem by designing a new assessment procedure based on repeated structured telephone interviews with mothers. Restricted range was still a problem: Mothers reported supervising their children 95% of the time. Thus, we did not include the measure in the findings for this study.

Parental discipline proves to be a very complex parenting process. We used negative reinforcement and negative reciprocity as two indicators of coercive discipline. We would like to be able to assess effective discipline as well, but good discipline is hard to observe. For example, parents who discipline well seldom have to apply sanctions, and ineffective parents seldom use appropriate sanctions. Thus, effective discipline practices tend to be low base-rate events. Nevertheless, our measures of coercive discipline are carefully tied to our theory, which states in part that parents inadvertently train their youngsters to use coercive tactics to achieve their aims. One way parents do this is with their own aversive behavior. They start unnecessary conflicts (perhaps with criticism or an angry command), and then they negatively reinforce their youngsters for using aversive behaviors to escape the unpleasant situation (i.e., negative reinforcement). Once the coercion process is in place, it is very difficult to change. In fact, as the mother is trained to apply mild contingent discipline, it produces a temporary increase in conflict bouts. In the present study, mothers in the experimental group showed an unexpected significant increase in conflict bouts relative to control-group mothers, and we were concerned that this was an iatrogenic effect. However, by the

12-month assessment, experimental-group mothers made a precipitous drop in their use of negative reinforcement to a level below that observed at baseline, which is a negative quadratic shape for the pattern of change. The use of negative reinforcement by control-group mothers, on the other hand, steadily increased.

This complex process is almost an exact replication of what we have previously found in our clinical interventions. In an observational study of therapy process during parent-training treatment, a substantial subset of families showed a similar negative quadratic shape in the form of resistance to the program procedures. Some parents increased their resistance from baseline to the midpoint of therapy and then decreased resistance by the end of therapy. This negative quadratic shape of resistance to the parent-training procedures predicted reduced likelihood of arrests and out-of-home placement 2 years later for the focal children of the treatment (Stoolmiller, Duncan, Bank, & Patterson, 1993). If there was no increase in the struggle, there was no change in the outcome. The negative quadratic form of change has been labeled the *struggle-work through hypothesis.* In the prevention trial, as mothers began confronting the child in discipline bouts, the struggle increased. This is a common occurrence in behavioral interventions when parents begin using effective discipline strategies. At first, children resist and problems can escalate. However, with consistent use of the discipline strategy, children accede and problems diminish.

Several decades of research have shown that parenting practices are malleable and that programs based on parent-training procedures benefit children's conduct problems (Chamberlain & Reid, 1998; Dishion, Patterson, & Kavanagh, 1992; Forgatch, 1991; Kazdin, 1987; Lipsey & Wilson, 1993; Patterson & Forgatch, 1995; Reid et al., in press; Webster-Stratton & Hammond, 1997; Wolchik et al., 1993). Few such studies, however, have tested the effect of change in parenting practices on change in child outcomes in controlled, randomized designs using multiple-method assessment. Each of the above-cited studies achieved one or several elements (e.g., change in parenting or change in child outcome), but they missed at least one critical component. For example, Dishion et al. found their intervention to alter coercive discipline, and termination levels of discipline correlated with reductions in adolescent behavior problems. Change in parenting, however, was not the predictor for change in child outcome. In the Forgatch study, the design was only quasi-experimental. In the present study, the intervention produced significant change in the parenting variables, and this change was associated as expected with change in child outcomes based on three reporting agents. The findings from the present study represent an advance in the development of research using intervention as an experimental test of the theory underlying the intervention.

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