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An Experimental Evaluation of Theory-Based Mother and Mother–Child Programs for Children of Divorce

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This study evaluated the efficacy of 2 theory-based preventive interventions for divorced families: a program for mothers and a dual component mother–child program. The mother program targeted mother–child relationship quality, discipline, interparental conflict, and the father–child relationship. The child program targeted active coping, avoidant coping, appraisals of divorce stressors, and mother–child relationship quality. Families with a 9- to 12-year-old child (N = 240) were randomly assigned to the mother, dual-component, or self-study program. Postintervention comparisons showed significant positive program effects of the mother program versus self-study condition on relationship quality, discipline, attitude toward father–child contact, and adjustment problems. For several outcomes, more positive effects occurred in families with poorer initial functioning. Program effects on externalizing problems were maintained at 6-month follow-up. A few additive effects of the dual-component program occurred for the putative mediators; none occurred for adjustment problems.

It is estimated that over 40% of all children in the current generation will live in a divorced family before the age of 16 (Cherlin, 1992). This increasingly common transition in family structure has significant implications for children's mental health. In a meta-analysis, Amato and Keith (1991a) showed that children of divorce have greater externalizing, internalizing, social maladjustment, and academic problems than those from two-parent homes, with the largest effect size occurring for externalizing problems. Although some researchers have emphasized the transitory nature of divorce-related problems, several studies indicate that for some children, difficulties persist during childhood. For example, Hetherington et al. (1992) found that children of divorce demonstrated significantly greater adjustment difficulties than children from two-parent households 4–6 years after divorce. For a substantial number of children, these problems are of a serious nature. Hetherington et al. reported that 25% to 35% of their divorced group had clinical levels of behavior problems, in contrast to 10% of the children from two-parent homes. Several other studies have shown that children from divorced homes are two to three times more likely to receive psychological treatment than those from intact homes (e.g., Zill, Morrison, & Coiro, 1993). Increasing evidence indicates that the effects of divorce in childhood persist into adulthood. For example, Chase-Lansdale, Cherlin, and Kiernan (1995) found a moderate effect of parental divorce in childhood on mental health at age 23, after controlling for children's predivorce cognitive characteristics, emotional problems and socioeconomic status. Similarly, in a meta-analysis, Amato and Keith (1991b) found that parental divorce in childhood was significantly associated with higher depression, poorer physical health, as well as lower marital quality, educational attainment, and income in adulthood.

Researchers may use a transitional-events model of divorce, in which marital dissolution is seen as a process involving a multitude of stressful changes in children's social and physical environments rather than as a single negative event (e.g., Felner, Farber, & Primavera, 1983; Sandler, Wolchik, & Braver, 1988). From this perspective, family processes that occur before and after the divorce, rather than family structure per se, are critical determinants of postdivorce adjustment problems. The divorce itself may exacerbate negative family processes (such as interparental conflict) and introduce additional stressors (such as decreased financial resources), thereby leading to increased adjustment problems. Researchers have demonstrated that the effects of these divorce stressors are mediated or mitigated by intra- and interpersonal factors. Intrapersonal factors include children's divorce appraisals (e.g., Mazur, Wolchik, Virdin, Sandler, & West, 1999; Sheets, Sandler, & West, 1997) and positive coping (e.g., Sandler, Tein, & West, 1994). Interpersonal factors include custodial parent–child relationship quality (e.g., Hetherington et al., 1992;

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Wolchik et al., 1993) and discipline (e.g., Forgatch & DeGarmo, 1999).

The identification of potentially modifiable correlates of children's postdivorce adjustment problems presents an important opportunity for the development of preventive interventions. If these variables have a causal effect on postdivorce adjustment problems, changing them through an intervention should reduce these problems (Sandler et al., 1997). Grych and Fincham (1992) argued convincingly that preventive interventions for children of divorce should focus on changing those variables that have been found to predict postdivorce adjustment problems. We refer to these variables as *putative mediators* because they are proposed to mediate the effects of divorce, and change in these variables is proposed to mediate the effects of interventions designed to improve postdivorce outcomes. To date, only a few preventive interventions for children of divorce have been rigorously tested, and most of these programs have focused on children's intrapersonal resources such as coping and divorce-related beliefs. In general, these psychoeducational–support programs have yielded positive effects on mental health outcomes (Alpert-Gillis, Pedro-Carroll, & Cowen, 1989; Pedro-Carroll & Cowen, 1985; Stolberg & Garrison, 1985; Stolberg & Mahler, 1994).

Despite research documenting that parents exert considerable control over variables that affect children's postdivorce adjustment, such as discipline and parent–child relationship quality (see Grych & Fincham, 1992, 1997), and that parents are effective change agents for children's behavior problems (see Taylor & Biglan, 1998), only three evaluations involved programs that targeted custodial parents. Stolberg and Garrison (1985) reported that a program for divorced mothers produced positive effects on mothers' personal adjustment, but no effects on parenting practices or children's adjustment. Wolchik et al. (1993) evaluated a program for custodial mothers based on a "small theory" (Lipsey, 1990). The underlying small theory articulated that program-induced change on the following empirically supported correlates of postdivorce adjustment problems would lead to improvement in these problems: (a) mother–child relationship quality, (b) discipline strategies, (c) divorce stressors, (d) noncustodial parent–child contact, and (e) support from nonparental adults. A small scale randomized experimental trial demonstrated significant program effects on most of the putative mediators and children's adjustment problems. Further, analyses showed that change in adjustment problems was partially mediated by changes in mother–child relationship quality. More recently, Forgatch and DeGarmo (1999) compared the effects of a mother-intervention condition with a no-intervention control condition on teacher, mother, and child reports of maladjustment. The intervention emphasized parenting practices such as discipline and contingent encouragement; it also included adult-focused issues such as regulating emotions. Although the intervention did not lead to direct effects on child outcomes, the intervention indirectly benefitted child report of maladjustment through improved parenting practices.

Logically, interventions that target both mothers and children should affect more putative mediators and thus produce stronger, more durable effects than interventions targeting only mothers or children (Grych & Fincham, 1992; Wolchik et al., 1993). Although the use of combined interventions is not new (see Goldfried & Newman, 1992; Kazdin, 1996), there are only a few well-controlled evaluations of interventions that include components for children and their parents. Some of this research provides support for the benefits of dual-component interventions (Kazdin, Esveldt-Dawson, French, & Unis, 1987a, 1987b; Kazdin, Siegel, & Bass, 1992; Webster-Stratton & Hammond, 1997). However, other evaluations have failed to find substantial additive benefits (Dishion & Andrews, 1995; Lewinsohn, Clarke, Hops, & Andrews, 1990; Stolberg & Garrison, 1985; Stolberg & Mahler, 1994). Theoretically, there are several reasons why incremental effects of dual-component programs may occur. Additive effects may be due to the impact of the two components on different correlates of adjustment problems. Alternatively, incremental effects may occur because the second component increases the magnitude of change on correlates of adjustment problems that are also targeted by the first component (Sandler et al., 1997). Finally, additive effects may occur because dual-component programs provide opportunities to systematically reinforce behavior change.

Surprisingly, the two evaluations of dual-component programs in divorced samples (Stolberg & Garrison, 1985; Stolberg & Mahler, 1994) failed to demonstrate substantial additive benefits on children's adjustment problems. Why were these programs unsuccessful in achieving incremental effects? In Stolberg and Garrison's evaluation, the mother component targeted adult divorce adjustment. Perhaps a focus on other empirically supported correlates of children's postdivorce adjustment problems that are more proximal to the child, such as discipline, is needed. Although the mother component in the Stolberg and Mahler (1994) study focused on specific types of mother–child interactions, such as encouraging discussion of divorce issues, there is little empirical evidence that these types of interactions per se are associated with fewer postdivorce adjustment problems.

This trial evaluated a dual-component intervention for divorced families that included separate but concurrent programs for mothers and their children. This evaluation differs from the previous evaluations in three important ways. First, the current components were based on a small theory approach to intervention design in which techniques were developed to target a specific set of empirically supported correlates of children's adjustment problems. Second, the component for mothers focused on changing aspects of the child's environment that directly involve the child versus more distal correlates of adjustment problems, such as the mother's divorce adjustment. Third, the evaluation had the following methodological strengths: The programs were explicitly described in a manual for leaders; a careful process evaluation assessed fidelity of implementation; program effects on putative mediators and psychological adjustment problems were assessed; and adjustment problems were assessed using multiple reporters and multiple methods. The evaluation included three conditions: (a) a mother program, which was highly similar to the program evaluated by Wolchik et al. (1993); (b) a dual-component intervention in which mothers and children participated in concurrent but separate group programs; and (c) a self-study program. The study examined the following hypotheses: (a) The positive effects of the program for mothers evaluated by Wolchik et al. were expected to be replicated; (b) the dual-component program was expected to produce additive effects over the mother program; (c) the replication and additive effects were expected to persist at a 6-month follow-up.

Method

Participants

Recruitment

Computerized court records of 1,816 randomly selected divorce decrees granted in Maricopa County (Phoenix, Arizona metropolitan area) within 2 years of the intervention start date and involved a child between the ages of 9 and 12 were the primary method of identifying potential participants. Of the final sample, 20% responded to media advertisements. Recruitment and assignment were conducted for four cohorts of participants.

Participants were recruited through letters and phone calls. When addresses from court records were no longer correct, project staff used a variety of methods to obtain current information (e.g., reverse telephone directories; new listings). A subset of individuals who could not be found through these means (hard-to-locate subsample; n = 532) were randomly selected for intensive location efforts (e.g., contacting neighbors). These efforts yielded current addresses and phone numbers for 68% of this group. Initial eligibility criteria were assessed by phone. Eligible families were invited to participate in an in-home recruitment visit and a subsequent pretest interview. Participants who remained eligible and interested after the pretest interview attended an orientation session, where they were randomly assigned to condition.

Inclusion criteria were (a) divorce decree was granted within the previous 2 years; (b) primary residential parent was female; (c) at least one child between 9 and 12 years resided primarily (≥50% of the week) with the mother; (d) neither the mother nor any residential child was currently in treatment for psychological problems; (e) mother had not remarried, did not have a live-in boyfriend, and did not plan to remarry during the trial; (f) custody arrangement was expected to remain stable during the trial; (g) family resided within a 1-hour drive of the site where the program was delivered; (h) mother and child could complete the assessment battery in English; (i) child was not in a special education program for the mentally challenged or learning disabled; and (j) if children had a diagnosis of attention deficit disorder, they were taking medication. In families with multiple children in the age range, one was randomly selected to be interviewed.[1] During the pretest interview, the eligibility criteria were reassessed, and families reporting changes were excluded. Because of the preventive nature of the intervention and ethical concerns, families were excluded and referred for treatment if the child scored above 17 (Burbach, Farha, & Thorpe, 1986) on the Children's Depression Inventory (Kovacs, 1981), endorsed an item about suicidal ideation, or had a score above the 97th percentile on the Externalizing subscale of the Child Behavior Checklist (Achenbach, 1991a).

Of the families contacted by phone, 48% (n = 671) met the initial eligibility criteria. Of these families, 68% (n = 453) completed the recruitment visit; 75% (n = 341) of the recruitment visit completers agreed to participate in the intervention study; 92% (n = 315) of these families completed the pretest. We found 16% (n = 49) to be ineligible at the pretest interview; an additional 8% (n = 26) withdrew before assignment. Families who completed the recruitment visit but declined the intervention were asked to participate in an interview study; 63% (n = 70) agreed and were interviewed.

Sample Representativeness

Sample representativeness was assessed by comparing pretest demographic variables, adjustment problems, and putative mediators between (a) the hard-to-locate group versus the rest of the sample, (b) intervention acceptors versus refusers, and (c) acceptors who were assigned to condition versus withdrawers. The hard-to-locate group refused the recruitment visit and intervention study significantly more often than the rest of the sample. Children in the hard-to-locate group had significantly higher teacher-reported shy–anxious behavior problems than the rest of the sample. Acceptors reported significantly higher incomes and education and fewer children than refusers. Children in the refuser versus acceptor group reported more positive coping, and mothers asked more open-ended questions during the mother–child interaction. Withdrawers reported less maternal education and lower child support than those assigned to condition; however, none of the putative mediators nor mental health outcomes differed significantly across these two groups.

Sample Characteristics

We randomly assigned 240 families to one of three conditions: (a) program for custodial mothers (n = 81); (b) dual-component (mother and child) intervention (n = 83); or (c) self-study, reading condition (n = 76). The pretest equivalence of the conditions was assessed using analyses of variance (ANOVAs) for continuous variables and chi-square tests for categorical variables. Only one significant difference occurred: Interparental conflict was lower in the self-study than in the dual-component condition.

Maternal ethnicity was as follows: 88% Caucasian, 8% Hispanic, 2% African American, 1% Asian, and 1% Other. Mean maternal age was 37.3 (SD = 4.8); 47% reported completing some college courses. Median yearly income was in the range of $20,001–$25,000. Legal custody arrangements were 63% sole maternal, 35% joint, and 2% split. Mothers had been divorced an average of 12 months (SD = 6.4) and physically separated an average of 27 months (SD = 17.2). The mean number of children was 2.2 (Mdn = 2.0). Average age of the interviewed children was 10.4 (SD = 1.1); 49% of these children were female.

Procedure

Data from three assessments were used: preintervention, postintervention, and 6-month follow-up. Interviews occurred in the family's home, with mothers and children being interviewed individually by trained staff. After confidentiality was explained to mothers and children, mothers signed consent forms and children signed assent forms. Families received $45 compensation for participating at each time point.

Multimethod, multiagent assessment was used. Mothers and children completed questionnaires assessing the putative mediators and adjustment problems, and teachers provided reports of children's adjustment problems.[2] Also, mother–child interactions were videotaped.

Measures

Putative Mediators

Mother–child relationship quality. Mothers and children completed 10 items[3] from each of the acceptance and rejection subscales of Teleki, Powell, and Dodder's (1982) adaptation of the Child Report of Parenting Behavior Inventory (CRPBI; Schaefer, 1965) and the 10-item Open Family Communication subscale of the Parent–Adolescent Communication Scale (Barnes & Olson, 1982). At pretest, Cronbach's alpha (α) values for child reports were .86 and .85, respectively; alphas for mother reports were .86 and .71, respectively. Also, 15-min mother–child interactions provided a measure of relationship quality. After a 5-min discussion about events of

[1] All children between the ages of 9 and 12 were invited to participate in the intervention. Siblings participated in separate groups and were not included in the data analyses.

[2] All measures that included a timeframe for consideration referred to the previous month, with exceptions noted.

[3] This shortened version contained those items with the highest item-total correlations and highest factor loadings in a confirmatory factor analysis conducted with another sample of about 200 divorced families.

the day, dyads were given 10 min to attempt to resolve a problem that had risen during the previous month, which mothers selected from a 27-item questionnaire. The following aspects of maternal communication were rated: asking open-ended questions, attending to the child, allowing latitude in the conversation, and validating child content (Griffin & Decker, 1992). Coders were masked to participant condition, received extensive training, demonstrated mastery of the code, and participated in ongoing training throughout coding. To assess reliability, 50% of interactions were first randomly selected. Then, 15% of each of these interactions were randomly selected and independently rated by two observers. Cohen's (1960) kappas were .95, .84, .76, and .83 for open-ended questions, attending, latitude, and validating content, respectively.

Discipline. Mothers completed 5 items on inappropriate discipline, 9 items on appropriate discipline, and 11 items on follow-through (Oregon Social Learning Center, 1991). At pretest, alphas were .59, .75, and .78 for appropriate and inappropriate discipline and follow-through, respectively. Mothers and children completed the 8-item Inconsistent Discipline subscale of Teleki et al.'s (1982) adaptation of the CRPBI (Schaefer, 1965). Fogas, Wolchik, and Braver (1987) reported adequate internal consistency and test–retest reliabilities for child and mother reports. Pretest alphas were .74 and .82 for child and mother reports, respectively.

Interparental conflict. Mothers and children completed the 6-item frequency subscale of the Children's Perception of Interparental Conflict Scale (Grych, Seid, & Fincham, 1992). Because the intervention focused on conflict in the child's presence, the three items assessing witnessed interparental conflict were used. At pretest, alphas were .64 and .58 for mother and child report, respectively.

Father–child relationship. Mothers completed 6 items that assessed support of the noncustodial father–child relationship (Braver et al., 1993). At pretest, alpha was .85. They also reported the number of different times the ex-spouse had visited the child during the previous month.

Appraisals of divorce stressors. Children completed the Threat Appraisal Scale (Sheets et al., 1996), which includes the following threats to well-being: negative self-evaluation, rejection by others, loss of desired objects and activities, harm to others, negative evaluation by others, and criticism of others. The scale has adequate reliability and validity (Sheets et al., 1996). At pretest, alpha was .92. Children completed this scale for the most negative stressor they reported had occurred on the Divorce Events Schedule for Children (Sandler, Wolchik, Braver, & Fogas, 1986).

Coping. Children completed 36 items from the Children's Coping Strategies Checklist—Revised (Program for Prevention Research, 1999). Confirmatory factor analyses (e.g., Sandler et al., 1994) provide support for the constructs of active and avoidant coping. For the current study, items were added to the active coping dimension that assessed optimistic thinking, control perceptions, and positive reframing; items assessing wishful thinking were added to the avoidant coping dimension. Children also completed a seven-item Coping Efficacy Scale (Sandler, Tein, Mehta, Wolchik, & Ayers, in press). Adequate reliability and validity have been demonstrated for these scales (Greene, 1997; Sandler et al., 1994). Pretest alphas were .87, .68, and .73 for active coping, avoidant coping, and efficacy, respectively.

To assess knowledge of appropriate ways to cope with divorce stressors, children completed questions about how they would cope with divorce stressors (e.g., interparental conflict). Transcripts were coded by two independent raters for active, avoidant, distraction, and support coping. Coders received extensive training and demonstrated mastery of the code before scoring the data. Of the transcripts, 33% were randomly selected for reliability assessment. Cohen's (1960) kappas were .94, .81, .81, and .89 for active, avoidant, distraction, and support coping, respectively.

Psychological Adjustment Problems

Externalizing behavior problems. Mothers completed the 33-item Externalizing subscale of the Child Behavior Checklist (CBCL; Achenbach, 1991a; Achenbach & Edelbrock, 1983). Children completed the aggression and delinquency subscales (30 items) of the Youth Self Report (Achenbach, 1991b). Teachers completed the six-item Acting-Out subscale of the Teacher–Child Rating Scale (Hightower, 1987). Adequate reliability and validity for these subscales have been reported (Achenbach, 1991a, 1991b; Hightower et al., 1986). Pretest alphas were .88, .87, and .90, respectively.

Internalizing behavior problems. Mothers completed the 31-item Internalizing subscale of the CBCL (Achenbach, 1991a; Achenbach & Edelbrock, 1983). Children completed the 27-item Children's Depression Inventory, which assesses depression in the last 2 weeks (Kovacs, 1981), and the 28-item Children's Manifest Anxiety Scale–Revised (Reynolds & Richmond, 1978). Teachers completed the six-item Shy–Anxious subscale of the Teacher–Child Rating Scale (Hightower, 1987). Adequate reliability and validity for these scales have been reported (e.g., Achenbach, 1991a, 1991b; Hightower et al., 1986; Kovacs, 1985; Reynolds & Richmond, 1978). Pretest alphas were .89, .84, .88, and .82, respectively.

To reduce the experimentwise error rate and ease presentation, we constructed composite scores for putative mediator and adjustment problems measures whenever possible. All child report and mother report measures of each construct were standardized and then averaged to form a composite score on the construct for each family. This procedure also has the advantage of helping to ensure that the full breadth of the construct is represented and that errors of measurement are minimized for constructs with multiple measures (Epstein, 1983). Teachers were unaware of the family's intervention condition. Thus, we analyzed teacher data separately because their reports could not be potentially contaminated by such factors as expectancy effects or demand characteristics. Finally, we analyzed the behavioral observation data separately for the same reason (Moscowitz, 1986).

Intervention Conditions

Several steps were taken to ensure high levels of fidelity. First, sessions were delivered using manuals that detailed the content and format. Second, extensive training (30 hr prior to the start of the program and 1.5 hr per week during program delivery) and supervision (1.5 hr per week during program delivery) were provided. Third, leaders were required to score over 89% correct on quizzes of session content prior to conducting each session. Fourth, extensive process evaluation data were collected to monitor fidelity of implementation.

Mother Program

The putative mediators and related intervention techniques for the mother program are provided in Table 1. As shown, several empirically supported change strategies were used for most mediators. Most program components were identical to those used in the earlier evaluation (Wolchik et al., 1993). However, the module on nonparental adult support in the first evaluation was deleted in this evaluation to accommodate an expanded discipline section.

Groups met for 11 sessions (1.75 hr each). In addition, there were two individual sessions (1 hr each), which were structured but allowed for tailoring the program activities to individual needs. Groups were co-led by two clinicians. Thirteen clinicians who had a master's degree in clinical psychology, social work, or another mental health-related field served as group leaders. Six leaders ran groups in both the mother and dual-component conditions.

The program was highly structured, with videotaped modeling and role plays used to teach the skills. Extensive weekly homework assignments focused on practicing program skills. Although data were collected on only one randomly selected child, mothers were expected to use the program skills with all their children. The clinical methods in the intervention were based on social learning and cognitive behavioral principles of behavior change (Forehand & McMahon, 1981; Guerney, 1978; Marlatt & Gordon, 1985; Patterson, 1974, 1982).

Table 1
Putative Mediators and Intervention Techniques

Putative mediator	Intervention technique
Program for mothers	
Quality of mother–child relationship	Positive family activities
	One-on-one time
	Attention for appropriate behaviors
	Listening skills
Effective discipline	Clear expectations and rules
	Use of effective consequences
	Increased consistency
Father–child relationship	Education about importance of father–child relationship
	Reduction of obstacles to visitation
Interparental conflict	Anger management skills
	Listening skills
Program for children	
Active coping	Problem-solving training
	Positive cognitive restructuring
Avoidant coping	Feeling awareness
	Relaxation
	Divorce information
Negative appraisals of divorce stressors	Positive cognitive restructuring
	Divorce information
Quality of mother–child relationship	Communication skills

Child Program

The putative mediators and intervention techniques are provided in Table 1. Groups met for 11 weeks (1.75 hr each) and were co-led by two clinicians. Nine clinicians who had a master's degree in clinical psychology, social work, or another mental health-related field, served as group leaders. Several clinical methods, all derived from social learning and social cognitive theory, were used. Children were taught skills such as recognizing and labeling feelings (Stark, 1990; Stolberg, Zacharias, & Camplair, 1991), using a deep-breathing relaxation technique (Weissberg, Caplan, & Bennetto, 1988), problem solving (Weissberg et al., 1988; Pedro-Carroll & Cowen, 1985), positive cognitive reframing (Meichenbaum, 1986), challenging common negative appraisals (Stark, 1990), and giving "I-messages" (Guerney, 1978). Skills were introduced through simple presentations, videotapes, or modeling by a group leader. Children practiced applying the skills to divorce-related situations through games, role plays, or, for communication skills, in a conjoint session with their mothers. They were instructed to practice skills at home.

Self-Study Program

Mothers and children each received three books, along with syllabi to guide their reading. Mothers received *Mom's House/Dad's House* (Ricci, 1980), *Growing Up Divorced* (Kalter, 1991), and *The Single Mother's Book* (Anderson, 1990). Children received *The Kid's Book of Divorce* (Eroses, 1981), *Divorce Happens to the Nicest Kids* (Prokop, 1986), and *When Your Parents Get a Divorce* (Banks, 1990). Participants received the first book a week after assignment to condition; they received the second book 3 weeks later and their final book 6 weeks after assignment.

Results

Process Evaluation

Leader's Knowledge of Intervention Content

On weekly quizzes about the content of the intervention, leaders of the groups for mothers had a mean score of 97% (SD = 3%). Leaders of the groups for children had a mean score of 98% (SD = 1%).

Completion of Program Segments

On the basis of detailed outlines, each mother session was subdivided into 7–11 major segments; each child session was subdivided into 7–10 segments.[4] Using video tapes of sessions, independent raters assessed the degree to which each segment was completed (1 = *not at all completed*; 3 = *completed*). Extensive training occurred; coders demonstrated mastery prior to scoring the tapes in the current trial. Reliability, assessed for a randomly selected subset of the sessions (20%), averaged 98%. The mean degree of session completion was 2.86 (SD = 0.39) and 3.00 (SD = 0.02) for the mother and child sessions, respectively.

Attendance

Mothers attended an average of 77% (M = 10.02; SD = 3.56) of the 13 sessions (11 group; 2 individual); children attended an average of 78% (M = 8.55; SD = 2.97) of 11 group sessions. When attendance at make-up sessions is included, mothers and children attended an average of 83% (M = 10.76; SD = 3.62) and 85% (M = 9.30; SD = 3.00) of the sessions, respectively.

Homework Completion

Mothers completed weekly homework diaries reporting on the skills that they practiced. These diaries were coded for appropriate completion of each assigned activity. Coders were trained until they demonstrated mastery of the coding system. One coder rated all the diaries; another independently rated a randomly selected subset (20%). Interrater agreement averaged 98%. The proportion of assigned activities that was appropriately completed was .54 (SD = .15) and .55 (SD = .15) for the mother and dual-component conditions, respectively.

Participant Evaluation

On a scale ranging from 1 (*not at all*) to 5 (*the whole book*), participants in the self-study condition reported reading about half of each of the books (M = 3.04, SD = .92 for mothers; M = 3.22, SD = 1.01 for children). Participants answered 11 items that assessed things learned from the program (1 = *not at all*; 5 = *very well*). For mother reports, alpha was .90; for children's reports, alpha was .89. Average item scores were analyzed using ANOVA followed up by post hoc Tukey's HSD tests. The dual-component group (M = 4.24) was rated higher by mothers than the mother group (M = 3.82), which was rated higher than the self-study group (M = 3.32), $F(2, 218) = 32.8$, $p < .001$. Children rated the dual-component group (M = 3.40) higher than the mother (M = 3.14) and the self-study groups (M = 3.12), which did not differ, $F(2, 215) = 4.79$, $p < .05$.

Attrition

All participants who were assigned to condition completed the posttest; 98% (234 out of 240) completed the 6-month follow-up.

[4] The final group session included only four components for the mother session and five components for the child session, respectively.

Of the 83 participants assigned to the dual-component condition, 10 (12%) did not complete the program (7 before the first session, 3 by the fourth session); of the 81 participants assigned to the mother condition, 16 (20%) did not complete the program (8 before the first session, 8 by the fourth session). The dual-component and the mother groups did not differ in their attrition rates, $\chi^2(1, N = 164) = 1.82, p = ns$.

Outcome Evaluation

Following the recommendations of Lee, Ellenberg, Hirtz, and Nelson (1991), data from all participants who were randomly assigned to intervention conditions were included in the analysis. This intent-to-treat analysis provides unbiased but conservative estimates of intervention effects given that not all participants received the full intervention protocol.[5]

Analytic Procedure

To test the hypotheses, we used procedures described by Aiken and West (1991) and West, Aiken, and Krull (1996) for testing interactions between continuous and categorical variables. For each dependent variable, the following regression equation was estimated:

$$\hat{Y}_2 = b_0 + b_1Y_1 + b_2D_1 + b_3D_2 + b_4D_1Y_1 + b_5D_2Y_1. \quad (1)$$

In this equation, $\hat{Y}_2$ is the predicted posttest score on the dependent variable, Y_1 is the pretest score on the variable, D_1 is a dummy variable contrasting the self-study condition with the mother condition, and D_2 is a dummy variable contrasting the dual-component condition with the mother condition. The mother condition is treated as the base condition in this dummy coding scheme. The continuous pretest score was centered (Aiken & West, 1991). For variables in which the b_4 and b_5 terms carrying the pretest variable x intervention interaction were both nonsignificant, the equation was reestimated dropping the two interaction contrasts (b_4 and b_5).

The interpretation of the unstandardized regression coefficients in Equation 1 is complicated by the presence of interactions. As explained by West et al. (1996), $b_0 - b_3$ are conditional effects: They must be interpreted at a specific value (0) of other predictor variables in the regression equation. The predicted mean of the mother intervention condition at the overall mean of the pretest variable is b_0; b_1 is the slope of the regression line in the mother condition; b_2 is the difference between the predicted means of the mother and self-study conditions at the overall mean of the pretest variable; b_3 is the difference between the predicted means of the mother and dual-component conditions at the mean of the pretest variable; b_4 is the difference between the slope of the mother condition and the self-study condition; and b_5 is the difference between the slope of the mother condition and the dual-component condition. For dependent variables for which the two interaction contrasts are nonsignificant and are dropped from Equation 1, $b_1 - b_3$ may be interpreted as unconditional. For these dependent variables, adjusted posttest means are reported.

Following the suggestions of the Task Force on Statistical Inference (Wilkinson, 1999), several indices associated with the results of the regression analyses are provided. For each regression coefficient coding intervention effects and their interactions in Equation 1, $b_2 - b_5$, we present the estimate of the unstandardized regression effect and the 95% confidence interval that provides information about the precision of the effect. For those effects of treatment that were statistically significant, we also present an estimate of the standardized effect size d calculated using procedures described by Rosenthal (1994). For regression equations from which interaction terms have been deleted, each value of d represents the effect of that treatment contrast for the full sample. For regression equations that contain significant interactions, the magnitude of the ds vary as a function of the participant's baseline level on the measure. In the columns labeled b_2 and b_3, we report the values of d for the two treatment contrasts evaluated at the mean of the distribution for the baseline measure. In the columns labeled b_4 and b_5, we report the values of d for the two treatment contrasts evaluated at a point 1 *SD* from the mean in the direction of risk on the distribution for the baseline measure (see Aiken & West, 1991). On the basis of Cohen's (1988) guidelines, values of approximately .2 may be interpreted as a small effect, .5 as a moderate effect, and .8 as a large effect.

Putative Mediators—Postintervention

Table 2 displays the effects of the intervention on the putative mediators. For mother–child relationship quality, there was a significant interaction contrast between the mother versus self-study conditions and the baseline measure, $t(227) = 2.02, p < .05$. As the baseline level of mother–child relationships becomes increasingly worse (i.e., as risk increases), the treatment effect increases in magnitude. At the mean of the distribution for the baseline level (0), $d = 0.49$, whereas at 1 *SD* below the mean (-0.60), $d = 0.56$ (see Table 2). The Johnson–Neyman test (Aiken & West, 1991) showed that the mother condition led to a statistically significant improvement in mother–child relationships for the region where the baseline mother–child relationship was less than 0.17. The results for the dual-component condition did not differ from the mother condition. On validation of child's content and attending, the adjusted mean of the mother condition ($M = .07$ for content; $M = .40$ for attending) was higher than the adjusted mean of the self-study condition ($M = .03$ for content; $M = .28$ for attending), $t(199) = -2.81, p < .01$, and $t(199) = -2.97, p < .005$, respectively. Contrary to prediction, the mother condition ($M = .40$) and the dual-component condition ($M = .30$) differed on attending, $t(202) = -2.27, p < .03$. No intervention effects were obtained for the measures of conversational latitude or open-ended questions.

On effective discipline strategies, the adjusted mean for the mother condition ($M = .48$) was significantly higher than the

[5] Methods of providing unbiased estimates of treatment effects that are limited to participants who comply with treatment have recently been proposed (Angrist, Imbens, & Rubin, 1996; Little & Yau, 1998). However, contrary to the assumptions of these methods, our self-study comparison condition was a minimal intervention rather than a no-intervention control, intervention compliance was a continuous rather than dichotomous variable, and the interventions frequently produced interactions rather than constant intervention main effects (see West & Sagarin, 2000). Thus, the use of these methods could not be expected to produce an unbiased estimate of the complier average causal effect.

Table 2
Results of Analyses of the Effects of Interventions on Putative Mediators at Posttest

Measure	Intervention contrasts		Interaction contrasts	
	b_2	b_3	b_4	b_5
Questionnaire/interview measures				
Mother–child relationship quality	−0.19 (−0.31 to −0.07) $d = 0.49^b$	.02 (−0.10 to 0.14)	.20 (0.01 to 0.40) $d = 0.56^c$	.06 (−.15 to .28)
Effective discipline strategies	−0.24 (−0.39 to −0.09) $d = 0.50^a$	.09 (−0.06 to 0.24)	—	—
Attitude toward father–child relationship	−.32 (−1.40 to 0.77) $d = 0.09^b$	.97 (−0.10 to 2.04) $d = 0.29^b$	0.20 (.00 to .39) $d = 0.29^c$	−.47 (−.65 to −.29) $d = 0.80^c$
Father–child contact	.86 (−0.65 to 2.37)	.41 (−1.09 to 1.90)	—	—
Interparental conflict	−.08 (−0.29 to 0.14) $d = 0.13^b$	−.04 (−0.26 to 0.18)	.35 (.06 to .64) $d = 0.22^d$	.10 (−.16 to .37)
Threat appraisal	1.58 (−1.83 to 4.99)	0.29 (−3.06 to 3.64) $d = 0.03^b$	−.18 (−.47 to .11)	−.45 (−.70 to −.19) $d = 0.40^d$
Coping				
Active strategies—questionnaire	.11 (−.09 to .31)	.10 (−.09 to .30)	—	—
Avoidant strategies—questionnaire	.04 (−.16 to .25)	−.11 (−.32 to .09)	—	—
Active—open-ended	−.06 (−1.00 to .88)	3.33 (2.39 to 4.26) $d = 1.14^a$	—	—
Avoidant—open-ended	−.01 (−.32 to .30)	−.38 (−.69 to −.07) $d = 0.39^a$	—	—
Distraction—open-ended	.09 (−.40 to .58)	.06 (−.43 to .54) $d = 0.04^b$	.15 (−.10 to .41)	.42 (.11 to .72) $d = 0.35^d$
Support—open-ended	−.10 (−.94 to .73) $d = 0.04^b$	1.13 (.31 to 1.96) $d = 0.44^a$	.40 (.04 to .75) $d = 0.28^c$	−.12 (−.48 to .25)
Behavioral observation measures				
Conversational latitude	−.14 (−.31 to .02)	.04 (−.13 to .20)	—	—
Validation of content	−.04 (−.08 to −.01) $d = 0.48^a$	.00 (−.03 to .03)	—	—
Open-ended questions	.03 (−.01 to .07)	.00 (−.03 to .04)	—	—
Attending	−.12 (−.20 to −.04) $d = 0.49^a$	−.09 (−.17 to −.01) $d = 0.40^a$	—	—

Note. For each parameter estimate involving a treatment effect in Equation 1, the following values are reported: unstandardized regression coefficient with 95% confidence interval in parentheses and Cohen's *d* (standardized effect size). For measures for which both interaction contrasts are not significant, these terms are dropped from Equation 1 (indicated by a dash). Terms for which neither the intervention contrast nor the corresponding interaction contrast are statistically significant are not reported.

[a] Cohen's *d* corresponding to intervention contrast for overall sample (no interaction). [b] Cohen's *d* corresponding to the intervention contrast evaluated at the mean of the pretest distribution of the sample (interaction). [c] Cohen's *d* corresponding to the intervention contrast evaluated at a point 1 *SD* below the mean of the pretest distribution of the sample. [d] Cohen's *d* corresponding to the intervention contrast evaluated at a point 1 *SD* above the mean of the pretest distribution of the sample.

adjusted mean for the self-study condition ($M = .24$), $t(232) = -3.10$, $p < .005$. The mother and dual-component conditions did not differ.

Two measures of the child's relationship with the noncustodial father were used. Mothers' attitudes toward the noncustodial father–child relationship showed a significant mother versus self-study condition contrast by baseline attitude interaction, $t(226) = 1.97$, $p < .05$. The results also showed a significant dual-component versus mother condition by baseline attitude interaction, $t(226) = -5.14$, $p < .001$. The magnitude of the preventive effect of the mother program relative to the self-study program increased as the baseline attitudes toward the noncustodial father–child relationship became more negative, with the two conditions showing a statistically significant difference for families with baseline scores of less than 30.9. The dual-component program produced an additional interactive gain over the mother condition, $t(226) = -5.14$, $p < .001$, which was statistically significant in the region where families had baseline scores of less than 35.7. The measure of frequency of father–child visitation did not change as a function of the interventions.

On the measure of interparental conflict, there was a significant Mother Versus Self-Study Condition × Baseline Level Interaction contrast, $t(166) = 2.33$, $p < .03$. Although the effect was in the expected direction, the Johnson–Neyman test did not identify a region where the two conditions showed a statistically significant difference.

In contrast to the putative mediators discussed earlier, the next three mediators were targeted for change only by the child program. For threat appraisal, there was a significant Baseline Level × Mother Versus Dual-Component Condition Interaction contrast of crossover form, $t(217) = -3.46$, $p < .001$. The Johnson–Neyman test showed two regions of significance: The dual-component condition lowered children's threat appraisals for children with relatively high baseline levels of threat appraisal (>50); it also increased levels (though still low) on threat appraisal relative to the mother condition for children at low baseline levels of threat appraisal (<28.6). The mother and the self-study conditions did not differ.

On neither of the two questionnaire measures of coping that children used to deal with problems during the previous month

were intervention or interaction contrasts significant. However, program effects occurred on the open-ended measure of knowledge of coping with divorce stressors. Children in the dual-component condition reported more active coping (M = 51), $t(221) = 7.00$, $p < .001$, less avoidant coping (M = 8.14), $t(221) = -2.41$, $p < .02$, and greater support coping (M = 4.69), $t(219) = 2.69$, $p < .01$, than children in the mother condition (M = 4.82, M = .90, M = 1.06 for active, avoidant, and support coping, respectively). For distraction coping, there was a significant Baseline Level × Dual-Component Versus Mother Interaction contrast, $t(219) = 2.70$, $p < .01$. The Johnson–Neyman test showed that at baseline scores greater than 4.21, children in the dual-component condition reported more distraction coping than children in the mother condition. For support coping, there was an unexpected Baseline Level × Mother Versus Self-Study Condition contrast, $t(219) = 2.17$, $p < .04$. The Johnson–Neyman test showed that at baseline scores of greater than 7.44, children in the self-study condition showed more support coping than children in the mother condition. All other tests of the self-study versus mother condition contrasts and the Baseline Level × Self-Study Versus Mother Condition Interaction contrasts revealed no significant effects.

Psychological Adjustment Problems—Postintervention

As shown in Table 3, on mother–child report of externalizing problems, the baseline Externalizing × Mother Versus Self-Study Condition Interaction contrast, $t(226) = 2.34$, $p < .03$, was significant. The extent to which the mother program lowered externalizing problems scores relative to the self-study condition increased as the child's baseline level of externalizing problems increased. The treatment effect was statistically significant in the region where the standardized externalizing score was greater than −0.32. The mother condition did not differ from the dual-component condition. On mother–child report of internalizing problems, the adjusted mean of the mother condition (M = −0.50) was lower than the adjusted mean of the self-study condition (M = −0.33), $t(229) = 2.10$, $p < .04$, $d = .34$. The mother and the dual-component conditions did not differ. Teacher report of acting out behavior did not show any effect of the intervention condition. Contrary to prediction, teachers reported more shy–anxious behavior for children in the mother (M = 9.06) versus self-study condition (M = 8.21), $t(223) = -2.19$, $p < .03$. No differences were found between the mother and dual-component conditions.

To examine the clinical significance of the findings, children were classified as above or below the cutoff point for the clinical range on either the CBCL Internalizing or Externalizing subscale ($T > 63$). A logistic regression was estimated in which the predictors were a covariate ("at or above clinical range" vs. "below clinical range" at baseline), a dummy variable coding the mother versus self-study condition contrast, and a dummy variable coding the mother versus dual-component contrast; the outcome variable was the child's status of "at or above clinical level" versus "below clinical level." The results showed the mother condition led to a significantly lower proportion of children who were above the clinical level (18%) relative to the self-study condition (28%), Wald$\chi^2(1, N = 236) = 4.92$, $p < .03$, odds ratio = 2.79. The dual-component condition (16%) did not differ from the mother condition, Wald$\chi^2(1, N = 236) = .23$, *ns*.

Putative Mediators—6-Month Follow-Up

As shown in Table 4, significant effects were obtained on three measures of mother–child relationship quality. A significant Baseline Level × Dual-Component Versus Mother Interaction contrast occurred for the questionnaire measure, $t(223) = 2.24$, $p < .03$. However, the Johnson–Neyman test did not identify a region where the two groups differed significantly. Two of the four observational measures of relationship quality indicated significant effects. For attending, the adjusted mean for the mother condition (M = .34) was significantly higher than that for the self-study condition (M = .27), $t(190) = -2.09$, $p < .04$. There was a significant Baseline Level × Dual-Component Versus Mother Interaction contrast on conversational latitude, $t(188) = 2.08$, $p <$

Table 3
Results of Analyses of Effects of the Interventions on Psychological Adjustment Problems at Posttest

Measure	Intervention contrasts		Interaction contrasts	
	b_2	b_3	b_4	b_5
Mother and child reports				
Internalizing problems	.17 (.01 to .32) $d = 0.34$[a]	.01 (−.14 to .17)	—	—
Externalizing problems	.28 (.13 to .44) $d = 0.57$[b]	.10 (−.05 to .26)	.24 (.04 to .45) $d = 0.65$[c]	−.02 (−.20 to .16)
Teacher report				
Acting out problems	.01 (−.96 to .98)	.08 (−.86 to 1.02)	—	—
Shy–anxious behaviors	−.85 (−1.61 to −.09) $d = 0.36$[a]	−.23 (−.97 to .51)	—	—

Note. For each parameter estimate involving a treatment effect in Equation 1, the following values are reported: unstandardized regression coefficient with 95% confidence interval in parentheses and Cohen's d (standardized effect size). For measures for which both interaction contrasts are not significant, these terms are dropped from Equation 1 (indicated by a dash). Terms for which neither the intervention contrast nor the corresponding interaction contrast are statistically significant are not reported.

[a] Cohen's d corresponding to intervention contrast for overall sample (no interaction). [b] Cohen's d corresponding to the intervention contrast evaluated at the mean of the pretest distribution of the sample (interaction). [c] Cohen's d corresponding to the intervention contrast evaluated at a point 1 SD above the mean of the pretest distribution of the sample.

Table 4
Results of Analyses of the Effects of the Interventions on Putative Mediators at 6-Month Follow-Up

Measure	Intervention contrasts		Interaction contrasts	
	b_2	b_3	b_4	b_5
Questionnaire/interview measures				
Mother–child relationship quality	−.07 (−.25 to .10)	.01 (−.16 to .18) $d = 0.02$[b]	.07 (−.20 to .35)	.34 (.04 to .64) $d = 0.26$[c]
Effective discipline strategies	−.12 (−.27 to .03)	.05 (−.10 to .19)	—	—
Attitude toward father–child relationship	Measure not collected			
Father–child contact	−.19 (−1.76 to 1.39)	−.92 (−2.45 to 0.60) $d = 0.04$[b]	−.10 (−.46 to .25)	−.34 (−.61 to −.07) $d = .14$[c]
Interparental conflict	.04 (−.21 to .30)	−.11 (−.37 to .15)	—	—
Threat appraisal	−2.10 (−4.98 to 0.79)	−2.36 (−5.16 to 0.44)	—	—
Coping				
Active strategies	−.01 (−.23 to .21)	−.26 (−.48 to −.04) $d = 0.37$[a]	—	—
Avoidant strategies	.01 (−.21 to .22)	−.11 (−.32 to .09)	—	—
Behavioral observation measures				
Conversational latitude	−.13 (−.30 to .03)	−.06 (−.22 to .11) $d = 0.11$[b]	−.10 (−.53 to .33)	.47 (.03 to .92) $d = 0.34$[d]
Validation of content	−.01 (−.03 to .01)	0.01 (−.01 to .02)	—	—
Open-ended questions	.00 (−.05 to .04)	.00 (−.05 to .04)	—	—
Attending	−.07 (−.14 to .00) $d = 0.37$[a]	−.06 (−.13 to .00)	—	—

Note. For each parameter estimate involving a treatment effect in Equation 1, the following values are reported: unstandardized regression coefficient with 95% confidence interval in parentheses and Cohen's *d* (standardized effect size). For measures for which both interaction contrasts are not significant, these terms are dropped from Equation 1 (indicated by a dash). Terms for which neither the intervention contrast nor the corresponding interaction contrast are statistically significant are not reported.
[a] Cohen's *d* corresponding to intervention contrast for overall sample (no interaction). [b] Cohen's *d* corresponding to the intervention contrast evaluated at the mean of the pretest distribution of the sample (interaction). [c] Cohen's *d* corresponding to the intervention contrast evaluated at a point 1 *SD* below the mean of the pretest distribution of the sample. [d] Cohen's *d* corresponding to the intervention contrast evaluated at a point 1 *SD* above the mean of the pretest distribution of the sample.

.04. For families in which high conversational latitude occurred at baseline (>1.59), the dual-component intervention led to an increase relative to the mother intervention.

Only two significant effects occurred for the other putative mediators. On the measure of father visitation, a significant Baseline Level × Dual-Component Versus Mother Interaction contrast occurred, $t(165) = 2.69$, $p < .02$. The Johnson–Neyman test indicated that families in the dual-component condition who had high levels of father visitation at baseline (>7.70) had lower levels of father visitation relative to the mother condition. Also, the mother condition ($M = .33$), relative to the dual-component ($M = .07$), led to higher levels of active coping, $t(225) = -2.30$, $p < .03$.

Psychological Adjustment Problems—6-Month Follow-Up

As shown in Table 5, a significant Baseline Level × Mother Versus Self-Study interaction on the mother–child measure of externalizing problems occurred, $t(223) = 2.28$, $p < .03$. The extent to which the mother program lowered externalizing problems scores relative to the self-study condition again increased as the child's baseline level of externalizing problems increased. The treatment effect was statistically significant in the region where the standardized externalizing score was greater than 0.11. A significant Baseline Level × Dual-Component Versus Mother Interaction contrast not found at the immediate posttest also occurred, $t(223) = 2.77$, $p < .01$. As the baseline level of externalizing problems increased, the mother condition led to an increasingly lower level of externalizing problems relative to the dual component program, with this difference attaining statistical significance in the region where the standardized externalizing score was 0.41 or larger at baseline. No significant effects were obtained on the measure of internalizing problems. A significant Baseline Level × Mother Versus Self-Study Interaction contrast occurred on teacher report of acting out, $t(212) = 1.96$, $p = .05$. Paralleling the results for the mother–child measure of externalizing problems, the extent to which the mother program led to a decrease in teacher reports of acting out problems relative to the self-study condition increased in magnitude as the baseline level of acting out problems increased, with this difference attaining statistical significance in a region defined by relatively high levels of acting out problems at baseline (>12.7). No intervention effects were found on the teacher ratings of shy–anxious behaviors.

Analyses indicated that there was a marginally lower proportion of children who were above the clinical range in the mother condition (13%) relative to the self-study condition (20%), Wald$\chi^2(1, N = 234) = 3.04$, $p < .09$, odds ratio = 2.31. The dual-component condition (20%) did not differ from the mother condition, Wald$\chi^2(1, N = 234) = 1.87$, *ns*.

Discussion

The findings of the current study replicate and extend our previous work (Wolchik et al., 1993) on prevention programs for

Table 5
Results of Analyses of the Effects of the Interventions on Psychological Adjustment Problems at 6-Month Follow-Up

Measure	Intervention contrasts		Interaction contrasts	
	b_2	b_3	b_4	b_5
Mother and child reports				
Internalizing problems	.04 (−.13 to .21)	−.01 (−.18 to .16)	—	—
Externalizing problems	.19 (.03 to .36) $d = 0.38$[a]	.11 (−.05 to .27) $d = 0.22$[a]	0.25 (.04 to .47) $d = 0.51$[b]	.28 (.08 to .47) $d = 0.48$[b]
Teacher report				
Acting out problems	.62 (−.57 to 1.82) $d = 0.17$[a]	.15 (−1.01 to 1.31)	0.28 (.00 to .55) $d = 0.34$[b]	.16 (−.10 to .42)
Shy–anxious behavior	−.35 (−1.56 to .86)	−.83 (−2.01 to .34)	—	—

Note. For each parameter estimate involving a treatment effect in Equation 1, the following values are reported: unstandardized regression coefficient with 95% confidence interval in parentheses and Cohen's *d* (standardized effect size). For measures for which both interaction contrasts are not significant, these terms are dropped from Equation 1 (indicated by a dash). Terms for which neither the intervention contrast nor the corresponding interaction contrast are statistically significant are not reported.
[a] Cohen's *d* corresponding to the intervention contrast evaluated at the mean of the pretest distribution of the sample (interaction). [b] Cohen's *d* corresponding to the intervention contrast evaluated at a point 1 *SD* above the mean of the pretest distribution of the sample.

divorced families. This program of research is in the efficacy phase of the Prevention Intervention Research Cycle (Institute of Medicine Report, 1994), which involves pilot studies and replication trials of promising interventions. The results of analyses comparing the mother and self-study conditions provide a replication of the positive program effects obtained in an earlier experimental trial of a highly similar program (Wolchik et al., 1993). Consistent with the earlier evaluation, the current program affected three of the four empirically supported correlates of children's postdivorce adjustment problems targeted for change: mother–child relationship quality, discipline, and the child's relationship with the father. Mother–child report and behavioral observation of mother–child relationship quality indicated positive program effects. For questionnaire measures, the effect was interactive such that the magnitude of the effects of the program became increasingly positive as the baseline level of the mother–child relationship quality declined. The behavioral observation data indicated that participants in the mother condition were more attentive and acknowledged the content of the child's communications more often than mothers in the self-study condition. Participants in the mother program also showed more effective discipline strategies, regardless of their initial status. The program effect on maternal attitudes toward the father–child relationship was an interactive one: As the mothers' attitudes at baseline became increasingly poor, the magnitude of the positive effect of the mother program increased. The lack of positive program effects on exposure to interparental conflict and amount of father–child contact is consistent with the findings of the earlier trial. The inability of the program to affect these putative mediators may reflect the limited amount of program time devoted to these topics (one session each), the limited control mothers have over their ex-spouses' behavior, or both. Direct involvement of fathers may be needed to affect these variables (Braver & Griffin, 2000).

Relative to those in the self-study condition, children in the mother condition evidenced reductions in mother–child reports of internalizing and externalizing problems. For externalizing problems, the effect of the program was interactive, with the magnitude of the improvement becoming increasingly large as the child's baseline level of externalizing problems increased. These findings replicate the positive program effects on adjustment problems obtained in the earlier experimental evaluation (Wolchik et al., 1993). Analysis also indicated that the intervention produced clinically significant change in the odds of being above the clinical level in internalizing or externalizing problems at postintervention.

In contrast to the findings for mother–child report of adjustment problems, teacher data indicated a nonsignificant program effect on acting out behaviors. This discrepancy across reporter may reflect differences in the content of the measures. It is also possible that the immediate postintervention reductions in externalizing behaviors were due to changes in the consequences mothers provided for these behaviors and thus were specific to nonschool settings. Alternatively, additional time may be needed for intervention-induced changes in externalizing problems to generalize to the school setting or for the change in children's behavior to be noticed by teachers. Contrary to prediction, teacher report of shy–anxious behavior was higher in the mother versus self-study condition. One possible explanation involves the impact of the program's emphasis on improving mothers' listening skills. Program-related experiences with their mothers may have increased the probability that children in the mother condition shared more feelings and concerns with their teachers after than before the program and more feelings and concerns than children in the self-study condition. These conversations may have led teachers to rate children in the mother condition as more worried than children in the self-study condition. The differences in findings across reporter of adjustment problems highlight the importance of obtaining multiple perspectives on children's adjustment problems. Further, these differences indicate that the intervention did not have uniformly positive effects; it had negative effects as well as positive effects on adjustment problems.

At the 6-month follow-up, neither mother–child nor teacher reports of internalizing problems showed intervention effects. However, the interactive program effect on the mother–child measure of externalizing problems was maintained. A new interactive effect emerged for teacher report of acting out problems, with the magnitude of improvement becoming increasingly large as the teacher's report of problems at baseline increased. In the context of the pattern of findings at posttest, the 6-month data suggest time-

dependent generalization of postintervention effects on externalizing problems to settings outside the home. The similarity in findings across teachers, who had no knowledge of program condition, and mothers and children reduces concerns that the program effects are due to factors such as demand characteristics (Orne, 1962). Given data documenting that children of divorce are particularly at risk for developing externalizing problems (Amato & Keith, 1991a) and that high levels of aggression in childhood are linked to negative outcomes in later adolescence and young adulthood (e.g., Farrington, 1991; Loeber & Hay, 1994), the intervention-induced reduction in aggression has important preventive implications.

Although the program effect on externalizing problems was maintained at follow-up, program effects on the putative mediators were not sustained. Further, the reduction in odds of being above the clinical level in mother-report internalizing or externalizing problems observed for the mother program at posttest, although still substantial in magnitude (odds ratio = 2.31), attained only marginal levels of statistical significance at follow-up. It is important to note that the statistical power to detect an odds ratio of 2 for the dichotomized clinical level outcome variable was less than .50 in contrast to the very high levels of power to detect moderate-sized intervention condition contrasts and interactions on the continuous outcome variables, a cost of dichotomization noted by Cohen (1983).

Future research should explore whether maintenance strategies such as booster sessions enhance the durability of program-induced change on putative mediators as well as indicators of clinically significant change in adjustment problems. The lack of maintenance of effects on the putative mediators needs to be considered in the context of the small theory (Lipsey, 1990) of the program, which argues that change in adjustment problems are due to changes in putative mediating variables such as mother–child relationship quality and effective discipline strategies (West, Wolchik, Tein, Sandler, & Pillow, 1990; Wolchik et al., 1993). Support for links between the putative mediators articulated in the small theory and children's postdivorce adjustment problems is provided by a large body of correlational research (see Grych & Fincham, 1997, for a summary of this research) as well as mediational analyses of the two experimental trials of this program (i.e., Tein, 1998; Wolchik et al., 1993). Given the lack of maintenance of program effects on the putative mediators, it is plausible that the intervention effects on externalizing problems will dissipate over time. Six-year follow-up data on this sample, which are currently being collected, will allow an examination of the longer term maintenance of program effects. Alternatively, different processes may be responsible for initiating change in the context of intervention programs and maintaining such change (e.g., Whisman, 1990). For example, whereas change in discipline strategies may play a critical role in initiating a reduction in externalizing problems, other factors such as peer reinforcement for nonaggressive behavior may be responsible for maintaining this reduction. It is also possible that change in variables not specified by the small theory and thus not directly targeted in the intervention may be partially responsible for both the posttest and follow-up effects on externalizing problems. To illustrate, program participation may have led mothers to supervise their children's activities more closely, thus reducing exposure to deviant peers, a well-documented risk factor for externalizing problems (e.g., Tolan & Thomas, 1995). Reductions in contact with deviant peers may have led to decreases in externalizing problems at postintervention and follow-up assessments.

The dual-component program led to few additive effects at posttest. Although the child program led to interactive, additive effects on threat appraisals and maternal attitudes toward father–child contact and consistent main effects on knowledge of appropriate ways to cope with divorce stressors, these changes did not translate into benefits on adjustment problems. At follow-up, three of the four significant effects favored the mother program. The lack of additive effects is consistent with some of the prior evaluations of single-component versus dual-component programs for preventing and treating children's mental health problems (e.g., Dishion & Andrews, 1995; Lewinsohn et al., 1990; Stolberg & Garrison, 1985; Stolberg & Mahler, 1994).

Failure to achieve additive effects can be due to problems with the program, measurement, or theory (Green & Lewis, 1986). The high level of fidelity of implementation in this trial reduces the likelihood that implementation problems explain the lack of additive effects. Process evaluation data indicated that leaders of the child program delivered the program as planned. Also, attendance at the sessions was consistently high. Further, consumer satisfaction was higher for the dual-component than the mother program. This trial evaluated change in adjustment problems, such as externalizing problems. It is possible that the current child program may have yielded additive effects had other aspects of divorce adjustment, such as attitudes about the divorce (e.g., self-blame for the divorce) been assessed. It is also plausible that misspecification of the small theory underlying the child component contributed to the lack of additive effects. Recent modeling of the processes affecting postdivorce adjustment problems suggests that our theory omitted a critical mediator. Prospective longitudinal models indicate that coping efficacy beliefs mediate the relation between active coping and adjustment problems (Sandler et al., in press). Thus, preventive interventions may need to concentrate on increasing perceived efficacy of coping, over and above knowledge of specific coping strategies.

There are several limitations of the present study. First, a large majority of the sample was Caucasian. Examining the efficacy of this program with ethnic minority families is an important direction for further research. Second, the study screened out many individuals who were interested in obtaining such services, including those who were receiving treatment for psychological problems. Future studies would benefit from using samples of high-risk divorced families that were not required to meet the present stringent inclusion criteria. Third, this study was a highly controlled efficacy trial in which the interventions were delivered under ideal conditions that included intensive training of group leaders, intensive supervision, and extensive evaluation of program delivery. Given the positive findings of two other experimental trials of prevention programs that target parenting skills of custodial mothers (Forgatch & DeGarmo, 1999; Wolchik et al., 1993), an important topic for future research involves the assessment of the effects of these programs when provided under natural service delivery conditions. Also, theoretical support for incremental effects of dual component programs and data showing beneficial effects of such programs with other populations argue for additional attention to such programs for children of divorce. Refinement of the model underlying child-focused programs could

lead to the development of child-based interventions that yield additive effects when used with mother programs.

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