Accelerating Recovery from Poverty: Prevention Effects for Recently Separated Mothers

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Abstract

This study evaluated benefits of a preventive intervention to the living standards of recently separated mothers. In the Oregon Divorce Study's randomized experimental design, data were collected 5 times over 30 months and evaluated with Hierarchical Linear Growth Models. Relative to their no-intervention control counterparts, experimental mothers had greater improvements in gross annual income, discretionary annual income, poverty threshold, income-to-needs ratios, and financial stress. Comparisons showed the intervention to produce a greater increase in income-to-needs and a greater rise-above-poverty threshold. Benefits to income-to-needs were statistically independent of maternal depressed mood, divorce status, child support, and repartnering. Financial stress reductions were explained by the intervention effect on income-to-needs. The importance of helping disadvantaged families with evidence-based programs is discussed.
Keywords: Prevention, income, PMTO, parenting, intervention.

In the last decade, approximately 16% of children in the United States under the age of 18 lived in poverty, although about 40% of children in households headed by single women lived below poverty levels (U. S. Census Bureau, 2002). Longitudinal studies have consistently found strong associations between poverty and adjustment problems for children and their parents (Duncan, Brooks-Gunn, & Klebanov, 1994; Hernandez, 1997; McLoyd, 1998). The adverse outcomes for children include a high prevalence of emotional and behavior problems, and deficits in cognitive functioning, academic performance, and physical health. For their parents, poverty is associated with low levels of education, unemployment or low-wage employment, stress, mental health problems, and ineffective parenting practices – all conditions that are particularly common in single-mother families. This complex network of poverty concomitants makes it difficult to identify mechanisms that entrap parents in poverty and to understand how poverty transmits its negative effects to children.

Intervention programs have been successful in populations disadvantaged because of poverty (Huston et al., 2001; Salkind & Haskins, 1982), and in populations at risk because of factors that accompany poverty, including low birth weight (Brooks-Gunn, McCormick, Shapiro, Benasich, & Black, 1994), teen or unmarried pregnancy (Olds et al., 1997), living in high-crime neighborhoods (Reid, Eddy, Fetrow, & Stoolmiller, 1999), and marital disruption (Forgatch & DeGarmo, 1999, 2002). Effective intervention strategies included providing financial aid to families (Huston et al., 2001), enriching children's early educational experiences (Ramey, Bryant, & Suarez, 1983), educating parents through home visits (Olds et al., 1997), providing parent education in groups (Forgatch & DeGarmo, 1999; Martinez & Forgatch, 2001), and offering combinations of these methods (Brooks-Gunn et al., 1994; Reid et al., 1999; Wolchik et al., 2000). Demonstrating intervention efficacy, however, does not necessarily clarify pathways that may mediate environmental factors and pathology (Rutter, Pickles, Murray, & Eaves, 2001). The problem is that most interventions have multiple actions, many of which are not the mechanisms themselves. To demonstrate causal status, a theory-based intervention must produce changes in specified mechanisms, and those changes must produce the hypothesized changes in outcomes when evaluated with appropriate statistical procedures (Coie et al., 1993). The Oregon Divorce Study (ODS) is

one of the few programs to have achieved this level of theory evaluation in family research for child outcomes (Rutter et al., 2001). In the present study, we attempt similar theory testing for maternal outcomes related to poverty.

The ODS consisted of two longitudinal investigations, each with independent samples of approximately 200 recently separated single mothers with elementary-school-aged sons (Forgatch & DeGarmo, 2002; Patterson & Forgatch, 1990). The samples were restricted to mothers with young sons because boys are more likely than girls to exhibit adverse effects of divorce as preadolescents (Shaw, Emery, & Tuer, 1993). The social interaction learning (SIL) model on which the ODS program was based specifies that the effect of adverse contexts on children's outcomes is mediated by disruption of parenting practices (Reid, Patterson, & Snyder, 2002). Recent marital separation was selected as a risk factor for testing the SIL model because of its well-known association with adverse environmental contexts, ineffective parenting practices, and adjustment problems for parents and children (Anderson, Hetherington, & Clingempeel, 1989). Families in the midst of the separation process make an ideal population in which to test the SIL model because there are disruptions in all three domains of the model (i.e., environment, family process, and adjustment).

The first ODS study (ODS I) carried out a 4-year passive longitudinal investigation with multiple-method, multiple-agent measurement during the first and last of four assessments. The data were applied to test correlational mediation models postulating that environmental disruptions associated with marital separation affected children's adjustment through their negative impact on parenting practices (Forgatch, Patterson, & Ray, 1996; Patterson & Forgatch, 1990). The adverse environmental contexts consisted of diminished resources (e.g., low income, unemployment or low-wage employment, low socioeconomic status), increased stress (e.g., financial difficulties, negative life and family events), disrupted social support, and increased emotional problems (e.g., depression, irritability). The need to better understand how this set of contexts may interfere with parenting led us to specify a divorce model with two maternal role systems as influential to child adjustment: "mother as parent" and "mother as person" (Forgatch & DeGarmo, 2002). Within this divorce adjustment model, the two maternal domains are related to each other bidirectionally and both impact child adjustment. Child adjustment, in turn, has bidirectional relationships with the two maternal domains. The SIL model postulates two types of parenting that contribute to child outcomes: effective parenting promotes healthy child adjustment, and coercive discipline produces negative child outcomes (Reid et al., 2002). Effective and coercive parenting, therefore, are encompassed within the "mother as parent" domain of the divorce model and targeted in the intervention.

The "mother as person" subsystem describes expected associations among the family environment variables. The relations among factors in this subsystem reflect bidirectional interconnections among limited resources, extensive stress, disrupted support, and maternal depressed mood. Each of these factors, individually and in concert with the others, is presumed to disrupt parenting practices and contribute further to child adjustment problems, which, in turn, make it more stressful and more difficult to parent (DeGarmo, Patterson, & Forgatch, 2004; Patterson & Forgatch, 1990).

Separating mothers can anticipate drops of 13% to 35% of pre-separation income, with many families sinking into poverty (Duncan & Hoffman, 1985; Smock, 1993). Such a decline in resources is stressful for the mothers heading these families (Lorenz et al., 1997). Financial loss and the many thorny sequelae of divorce contribute to psychological distress; added stress with declines in social support can exacerbate adjustment problems such as depression and irritability (Coyne, Kessler, Tal, Turnbull, & Wortman, 1987). Dysfunctional behavior tends to interfere with healthy adult relationships which further limits resources, disrupts support, and adds to future stress (Patterson & Forgatch, 1990). Over time, the model specifies that further perturbations (e.g., repartnering, an intervention program) to the system can alter trajectories, for better or for worse (Forgatch & DeGarmo, 2002). Our expansion of the theoretical

model to study maternal adjustment was accompanied by an attendant expansion of the intervention for parent management training, the Oregon model (PMTO). The program, *Parenting through Change* (Forgatch, 1994), combined training in parenting practices with skills training for personal improvement.

Findings from Study 2 of the ODS intervention (ODS II) supported the SIL model, yielding positive outcomes for child and maternal adjustment (DeGarmo & Forgatch, 2005; DeGarmo et al., 2004; Forgatch & DeGarmo, 1999, 2002; Martinez & Forgatch, 2001). Benefits to positive and coercive parenting practices revealed classic prevention effects: Mothers in the control group showed a steady deterioration in both types of parenting over 30 months while mothers in the experimental group maintained baseline levels. The intervention's impact on parenting practices produced positive outcomes for boys in several areas of functioning: teacher ratings of aggression, delinquency, externalizing and internalizing behavior, adaptive functioning, and prosocial behavior; laboratory tests for reading achievement; observations of noncompliance and aggressive behavior; and boys' self-report of depression, peer relations, and association with deviant peers. Thus, the ODS findings provided strong support for the SIL model, with parenting practices functioning as causal mechanisms for the child outcomes.

Two dimensions showed hypothesized positive effects in the "mother as person" domain. Relative to their control counterparts, experimental mothers reported significant reductions in depressed mood and financial stress (Forgatch & DeGarmo, 2002). Mothers in both groups reported gradual recovery from depression with time after the separation; by 30 months the trajectories between the groups had significantly diverged, favoring the experimental mothers. In a subsequent analysis, DeGarmo et al. (2004) tested a theoretically based model that evaluated the pathways to reduced maternal depression. The intervention effect on maternal depression was mediated by the intervention effect on boys' externalizing behavior. The series of longitudinal latent growth models showed that benefits to parenting practices produced reductions in boys' internalizing and externalizing behaviors, and the reduction in externalizing behaviors mediated the intervention effect on maternal depression. Thus, as boys' behavior improved, mothers' depression lifted. This finding was in keeping with the SIL model and longitudinal analyses in ODS I.

We added a personal development module to the parent-training program to address common problems confronting single mothers, and we presumed that this module would produce an array of intervention effects on maternal adjustment. Other parent training programs have demonstrated that adding components to enhance parental personal adjustment broadens treatment gains (Dadds, Schwartz, & Sanders, 1987). Training in family problem-solving skills has been a regular component of Oregon Social Learning Center (OSLC) interventions for nearly two decades (Forgatch & Patterson, 2005) . For the ODS II intervention, we expanded the problem-solving component for mothers to apply toward personal objectives (e.g., education and career). Olds and colleagues incorporated similar strategies in their intervention that resulted in broad-ranging effects for maternal outcomes (e.g., Olds et al., 1997).

At baseline, the mothers in the ODS I and II reported precipitous income loss following marital separation, with 76% of the families in ODS II receiving public assistance and more than 50% living below the poverty threshold (Forgatch & DeGarmo, 2002). In an investigation designed to understand the negative economic outcomes of divorce on mothers, Smock (1993) studied two cohorts of divorcing young women during two decades from the late 1960s through the late 1980s. Regardless of decade, three factors contributed to economic recovery: full-time work, education, and repartnering. Advanced maternal education is associated with many positive adjustment factors within families, but a good education is especially helpful when it comes to obtaining well-paying jobs (Duncan et al., 1994; Hernandez, 1997; McLoyd, 1998). Repartnering as a strategy for recovering from poverty may work, but repartnering tends to be a temporary state. Although 75% of divorced people repartner, repartnering lasts approximately 5 years with marriage and even less without marriage (Bumpass & Sweet, 1989; Bumpass, Sweet, &

Martin, 1990). Divorce status and child support are also associated with maternal income following separation. Because our sample was of recently separated mothers, we included whether or not mothers had divorced in our models of fiscal outcomes. We also added a measure of child support, although there are significant differences between the amount a court awards and what the mother receives (Duncan & Hoffman, 1985). Controlling for these variables, we anticipated that the ODS intervention could contribute to fiscal recovery for mothers in the experimental group relative to their counterpart controls. In turn, we expected that fiscal recovery would account for the reduced financial stress found earlier.

Many investigators with correlational data have tested models showing that poverty disrupts parenting practices. Some have shown the association between poverty and negative child outcomes to be mediated by parenting problems (e.g., Duncan et al., 1994; McLoyd, 1998). Other studies have found relations between income, maternal depression, parenting practices, and child outcomes (Webster-Stratton & Hammond, 1988). Such correlational data cannot evaluate causal relations. We know of no experimental studies that have demonstrated *how* an intervention designed primarily to improve child outcomes achieved improved child outcomes *and* improved poverty status unless the intervention provided direct financial assistance to the families (e.g., Huston et al., 2001; Salkind & Haskins, 1982).

Hypotheses

To better understand intervention effects on fiscal outcomes, we tested two sets of hypotheses related to the "mother as person" dimension of the divorce model. We hypothesized that a number of resources would lead to a reduction in financial stress and benefits to income: status as divorced and/or repartnered, receipt of child support, longer working hours, and higher occupational status. Because family incomes are volatile, we evaluated the more stable measure, income-to-needs, which provides an index of subsistence living (Duncan et al., 1994). Given the intervention's association with reduced financial stress, we hypothesized several improved economic factors for mothers: gross annual income, discretionary income, poverty threshold status, and income-to-needs ratio. We predicted that previously identified intervention effects (i.e., improved parenting practices, child outcomes, and maternal depression) would account for the benefits to income-to-needs ratio and financial stress.

Methods

Participants

Participants were 238 recently separated single mothers and their sons residing in a medium-sized city in the Pacific Northwest. Families were recruited through media advertisements, flyers distributed throughout the community, and divorce court records. Mothers in eligible families (a) had cohabitated with an intimate partner for at least 12 months; (b) had ceased cohabitating with their partner within the prior 3 to 24 months; (c) resided with a biological son in Grades 1 through 3; and (d) did not cohabit with a new partner. To increase power to detect significant intervention effects on boy adjustment, we limited the sample to young boys: Study 1 of ODS had found greater growth in adjustment problems for boys in Grades 1 - 3 than boys in Grades 4 - 8 (Forgatch et al., 1996).

At baseline, mothers had been separated for an average of 9.2 months (*SD* = 5.5). In terms of marital status, 13% were never married, 28% were separated, 2% were legally separated, 16% filed for divorce with status pending, and 40% had finalized divorces. Families tended to be small, with 2.1 children on the average. Mothers' mean age was 34.8 years (*SD* = 5.4); boys' mean age was 7.8 years (*SD* = .93). The racial/ethnic composition of the boys was 86% White, 1% African American, 2% Latino, 2% Native American, and 9% from "other" racial/ethnic groups including those identified as belonging to more than one group. This distribution reflected the racial/ethnic makeup of the community in which the study was conducted. The mean annual family income was $14,900, which was similar to that reported

for other female-headed households with children in the county at that time (i.e., $15,300; U.S. Census Bureau, 1993).

The sample had adequate range in educational and occupational categories. The majority of mothers (76%) had some academic or vocational training beyond high school, with 17% having 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. Most mothers were classified within the lower- and working-class ranges in terms of occupation (Hollingshead, 1975): 32% unskilled, 21% semiskilled, 23% clerical/skilled, 22% minor professional to medium business, and 3% major business/major professional.

In previous analyses specified to examine parenting mechanisms and child adjustment outcomes, the experimental and control groups differed on two baseline variables: the number of months since separation and boy's age. On average, mothers in the experimental group had been separated for about 2.4 months longer than those in the control group (M = 9.84 and 7.48, respectively, $p < .01$). Boys in the experimental group were about .28 years younger than those in the control group (M = 7.65 and 7.93, respectively, $p < .05$). These variables along with mothers' age were included in all multivariate models because they are potentially relevant.

Study Design

Families were randomly assigned, with 64% in the experimental group (n = 153) and 36% in the no-intervention control group (n = 85). The unequal assignment to group condition was done to provide sufficient sample size within the experimental group to examine potential full-implementation effects of the intervention (Vinokur, Price, & Caplan, 1991).

Participants were screened for eligibility, received a description of the study, and were invited to participate knowing they would be randomly assigned to experimental or control condition on the first telephone contact. All interested and eligible participants were scheduled for a home visit. Of the 241 eligible families, 3 declined participation. Before the home visit, a person with no participant contact randomly assigned families to condition using a computerized program. At the home visit, further study information was provided, questions were answered, and informed consent was obtained. Assessment schedules and payment for assessment activities were the same for experimental and control families At each assessment, there were two separate interviews, one involving procedures for mothers and their participating children (about 2.5 hours) and another for the mother and her participating confidant (about 1 hour).

Participant families received extensive multiple-method, -setting, and -agent assessment five times: at baseline and at 6, 12, 18, and 30 months. A minor assessment was conducted at 24 months but did not include outcomes analyzed for the present paper. An attrition analysis found equal participation for experimental and control groups at each assessment, with a mean of 87% participation for each group for all five assessments (Forgatch & DeGarmo, 2002). All experimental families had completed the intervention by the 6-month assessment.

Intervention

The intervention consisted of a series of parent group meetings held weekly in the early evening hours at OSLC, which is centrally located in the community. Assistance with transportation was provided

when needed. All intervention participants received childcare and dinners separately for mothers and for the children in childcare during sessions. There was no payment for intervention participation per se, although two $5 drawings were held at each session, one based on attendance and one for home practice assignment completion. The curriculum included 14 weekly topics, with sessions listed by topic and content in Appendix 1. There were 13 parent groups, ranging in size from 6 to 16 (M = 9.5). Experimental-group mothers participated in an average of 8.5 sessions (SD = 5.7). Of the 153 participants in the experimental group, 29 (19%) attended no sessions, 20 (13%) attended between 1 and 4 sessions, and 104 (68%) attended more than 4 sessions. Intent to treat (ITT) group assignment was applied in all analyses, which provides a conservative estimate of intervention effects. Effect sizes can be underestimated using the ITT approach (Jo & Muthen, 1997) because data from all participants is included whether or not they attended intervention sessions.

Forgatch and DeGarmo (1999) and Forgatch, Beldavs, Patterson and DeGarmo (in press) summarized the content of each intervention session, described interventionist training, and provided particulars regarding program fidelity. The intervention program is fully detailed in the manual *Parenting Through Change* (Forgatch, 1994). The manual contained information for group leaders and materials for mothers. In the leader manual, each session was outlined with agenda, objectives and rationales, procedures, exercises and role-plays, and group process suggestions. Parent materials included summaries of session information, home practice assignments, charts, and other necessary materials. The program also featured a 30-minute videotape, *The Divorce Workout* (Forgatch & Marquez, 1993). The workout metaphor was used to show three families developing skills to manage a variety of parenting and personal problems that accompany separation. Scenes depicted the families growing stronger as they overcame obstacles. The group sessions taught strategies for parenting and personal adjustment. Topics were presented in an integrated step-by-step approach. Skills were introduced in one or more sessions and revisited throughout the remainder of the program. Each session provided discussion time for personal issues.

The "mother as parent" dimension of the program was built around the five theoretically specified parenting practices: skill encouragement, appropriate discipline, monitoring, problem solving, and positive involvement. Mothers learned to apply these skills to increase children's prosocial development (e.g., praise and incentives for positive behavior, family problem-solving strategies, parental involvement in children's activities). Mothers also learned to decrease coercive parenting approaches (e.g., negative reciprocity, negative reinforcement, escalation) that promote deviant child development.

Strategies designed to enhance maternal adjustment in the "mother as person" model were also based on social interaction learning principles. Mothers learned skills designed for self-improvement particularly focused on problem solving strategies (e.g., reduce stress, advance educational and career goals, improve financial circumstances). Problem-solving techniques included: specify achievable goals, identify small steps toward the goal that build on one another, establish mini-programs to achieve goals, and evaluate and revise programs regularly. Mothers also learned to negotiate interpersonal conflict (e.g., with ex-partners, co-workers, friends) and to regulate negative emotions (e.g., depression, irritability).

Measures

Dependent Variables

In terms of the dependent variables and the focus of the analyses, we descriptively evaluated several related economic indicators. The first three measures were raw annual income in constant dollars, discretionary annual income in constant dollars, and poverty threshold. The main dependent variables for the multivariate analyses were the income-to-needs ratios and financial stress. Income-to-needs was

evaluated as the key dependent variable because it takes into account raw income and poverty thresholds for a given family size.

Income-to-needs ratio. This score was calculated as a mother's report of *her* gross annual income divided by the poverty threshold for her family size for a given year (see Duncan et al., 1994). Income sources included in this measure were left to the mothers' discretion. For the longitudinal analyses, dollar amounts were corrected for inflation by converting income to 1993 constant dollars based on the percent change in the U. S. Consumer Price Index (Bureau of Labor Statistics, 1998). First, mothers reported their average monthly income in dollar amounts. We then annualized the amount by multiplying by 12[1]. Second, the denominator was based on poverty thresholds from data provided by the U.S. Census Bureau Labor Statistics for the years 1993 to 1998.

Annual discretionary income. This variable was calculated by subtracting the amount of subsistence income needed to be above the poverty threshold for a given year for a given family size. In other words, it was the amount of dollars a mother had to spend on her family over and above the amount she needed to remain above poverty. Discretionary income was converted to 1993 dollars.

Poverty threshold status. Threshold data included dollar amounts for a given family size for a given year. Categories were based on family sizes ranging from no children to eight or more. We also computed poverty status as a dichotomous variable coded "1" for families below the poverty threshold and "0" for families with annual incomes that exceeded thresholds.

Financial stress. Seven items measured the financial stress construct. The first was a summative index, with yes or no answers in response to, "Are you able to afford (a) a large enough house, (b) furniture or household equipment that needs replacement, (c) the kind of car you need, and (d) car repairs, fuel, insurance?" The next four items were in response to, "How often does it happen that you do not have enough money to afford (a) the kind of food your family should have, (b) the kind of medical care your family should have, (c) the kind of clothing your family should have, and (d) the leisure activities that your family wants?" and scored 1 (*never*) to 4 (*every month*). The sixth item asked, "How much difficulty do you have in meeting monthly bill payments?" scored 1 (*a great deal of difficulty*) to 4 (*no difficulty at all*). The last item asked, "How do your finances work out at the end of month?" scored 1 (*some money left over*), 2 (*just enough money to make ends meet*), and 3 (*not enough money to make ends meet*). The summative index and the other response items were all rescaled to a 1-to-5 range and then averaged to reflect higher financial stress. Cronbach's alpha reliabilities were .81, .82, .86, .87, and .86 from baseline to 30 months.

Independent Variable

Group assignment. To test intent-to-treat effects (ITT), a dichotomous variable was entered indicating random assignment, coded "1" for experimental and "0" for the no-intervention control groups.

Potential Intervening Variables

Depressed mood. To control for reporter bias, we entered the mothers' depressed mood as a time-varying covariate in the multivariate models. The sum score was from the Center for Epidemiological Studies – Depression scale (CES-D: Radloff, 1977). Twenty items were rated assessing mood in the past week (e.g., felt depressed, fearful, hopeful about future) rated from 0 (*rarely or none of the time*) to 3 (*most or all of the time*). Cronbach's alphas were .92, .94, .91, .92, and .92 from baseline to 30 months.

Months separated. To control for differences in adjustment periods, we controlled for the number of months from the time mothers ceased cohabiting prior to study entry at baseline.

Divorce filing status. To control for selection or financial differences associated with filing status, we computed a variable coded "0" for no divorce filed and "1" for divorce pending or finalized.

Child support. To control for additional income, we entered the monthly dollar amount mothers reported receiving in child support (i.e., actually received, not amount awarded). Child support was reported at each follow-up wave.

Repartnering status. For each follow-up wave, the mothers reported whether or not they had a new romantic, live-in partner for at least 3 months. The variable was coded 0 for remained single and 1 for repartnered.

Hours working. For each follow-up wave, mothers reported the number of hours they worked per week on the average.

Occupational status. For each follow-up wave, the mothers' report of primary occupation was coded using categories ranging from 1 to 9 from the Hollingshead Four Factor Index of Social Status (Hollingshead, 1975).

Educational status. For each follow-up wave, mothers reported the years of education obtained.

Analytic Strategy

We applied hierarchical linear growth modeling (HLM: Bryk & Raudenbush, 1992; Raudenbush, 1995), a multilevel regression technique capable of modeling data with uneven time intervals; in our case, baseline and 6, 12, 18, and 30 months. Growth models combine individual and group levels of analysis, taking into account mean growth for the sample and individual variation in growth. The current analysis was a two-level model with repeated assessments of outcomes modeled as the level one dependent variable. These growth rates are nested within individual and group characteristics modeled as the level-two predictors. In that sense, we modeled level-two characteristics (e.g., intent-to-treat status, occupational conditions, child support, repartnering) hypothesized to predict growth in mothers' level-one variables over time (i.e., change in income-to-needs ratio and change in financial stress).

Linear slopes were estimated as repeated measures, specifying variation in individual trajectories. The individual growth curves and their variance then became the outcome focus of analysis. The outcome slopes were then regressed on fixed or time-varying predictors. The level-one model (Equation 1) was the individual trajectories of financial stress and income-to-needs ratio specified as a function of an intercept and growth rate determined by repeated assessment time spacing, a time-varying control for depressed mood, and a random error term:

$$Y_{ti} = \pi_{0i} + \pi_{1i}(\text{Time})_{ti} + \pi_{2i}(\text{Depressed Mood})_{ti} + e_{ti} \quad (1)$$

where Y is the dependent variable for individual i repeated over time. The π_{1i} coefficient is the growth rate for person i over the data-collection period and represents individual rate of change from baseline to 30 months. We specified baseline as t = 0, and each follow-up was the number of months since baseline. The intercept parameter, π_{0i} is then the income or financial stress for an individual at $(\text{Time})_{ti} = 0$ or baseline. The π_2 parameter controls for mothers' depressed mood at each time interval.

Combining levels one and two, the level-two model then specifies the individual variation in baseline intercepts (Equation 2) and slopes, the change over time, as dependent variables (Equation 3) plus random error terms. In our analysis, the mean intercept for baseline status was specified as

$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{divorce status}) + \beta_{02}(\text{boy age})_i + \beta_{03}(\text{mother age})_i + \beta_{04}(\text{mos. separated})_i + \beta_{05}(\text{mother's education})_i + \beta_{06}(\text{mother's occupation}) + \beta_{07}(\text{child support})_i + r_{0I} \quad (2)$$

and the mean growth rates were specified as

$$\pi_{1i} = \beta_{10} + \beta_{11} \ldots \beta_{14}(\text{control variables}) + \beta_{15}(\text{group assignment})_i + \beta_{16}(\text{repartnering})_i + \beta_{17}(\text{hours working})_i + \beta_{18}(\text{occupation})_i + \beta_{19}(\text{education})_i + \beta_{110}(\text{child support})_i + r_{1I} \quad (3)$$

where, for example, β_{00} is the average baseline intercept for the sample controlling for filing status, boy and mother age, months since separation, education, and occupation. β_{05} represents the unique effect of education on baseline levels of income or financial stress. For growth rates, β_{15} represents the unique effect of the intervention group assignment on the rate of change in income-to-needs or financial stress controlling for other variables over time.

HLM provides several advantages for evaluating intervention results. First, it can handle mistimed and missing longitudinal data for estimating slopes. Random error and linear slope coefficients require 3 or more time points in the data. Each family had completed baseline in our data. Therefore, individuals who had 1 or 2 missing data points out of the 4 follow-up assessments were not excluded from analyses. Second, HLM estimated growth based on each individual's actual assessment timeline. For example, slopes can be estimated for one person assessed at 6-month intervals (e.g., baseline and 6, 12, 18, and 30 mos.) while another person's can be estimated for sporadic assessments that varied because of the realities of scheduling (e.g., baseline and 5.6, 13, 19, and 32 mos.). Repeated measures analysis of variance (MANOVA) focuses on means and not variance in trajectories and requires listwise deletion of data assumes the time spacing (equal or unequal spacing) and is the same for all individuals. A third advantage of the growth curve approach for the purposes of intervention analysis is that slopes computed from repeated measures are more reliable estimates of change than are pretest-posttest comparisons, given any level of measurement or sampling error (Kraemer & Thiemann, 1989). All hypothesized intervention effects were tested in the models below as intent to treat randomized groups, using two-tailed alpha levels.

Results

The means and standard deviations for several economic indicators are presented in Table 1 across time for each group condition. There were no significant substantive differences in the findings for mean comparisons using pair-wise, list-wise, or HLM-deletion methods. Pair-wise means were listed because HLM models families with partial longitudinal data but requires complete data for Level 2 predictors of growth. That is, not all cases are required to have 5 time points to estimate a linear slope. Overall, the findings were consistent across all indicators: There were no cross-sectional group differences for any point in time but the *rate* of change was significantly different. Using growth curve models, the experimental group showed greater growth in annual income, discretionary annual income, and income-to-needs ratios, and greater reduction in poverty status and financial stress.

Table 1. Means and Standard Deviations, and Intervention Effects for Economic Indicators

	Experimental		Control		Group × Time Effect
	M	(SD)	M	(SD)	ß
Gross Annual Income†					$1,289.56*
Baseline	$14,457.22	(9,059.22)	$14,920.05	(13,905.23)	
6 months	14,035.68	(8,523.05)	14,227.81	(9,104.12)	
12 months	16,728.11	(9,635.52)	14,920.12	(10,357.81)	
18 months	17,553.29	(12,411.53)	14,828.68	(9,169.42)	

30 months	18,112.76	(12,196.52)	16,886.69	(12,267.96)	
Discretionary Income†					$1,194.06*
Baseline	$2,046.49	(11,415.14)	$1,236.98	(12,287.72)	
6 months	1,281.50	(9,895.26)	1,907.26	(12,707.87)	
12 months	3,496.87	(11,377.08)	1,951.69	(10,459.67)	
18 months	5,048.75	(12,942.01)	2,445.27	(10,792.78)	
30 months	6,768.76	(15,209.58)	3,950.72	(13,840.01)	
Poverty Threshold Status					-0.20*
Baseline	0.52	(0.50)	0.51	(0.50)	
6 months	0.53	(0.50)	0.50	(0.50)	
12 months	0.43	(0.49)	0.41	(0.49)	
18 months	0.45	(0.50)	0.44	(0.50)	
30 months	0.38	(0.49)	0.42	(0.49)	
Income-to-Needs Ratio					0.10*
Baseline	1.20	(0.80)	1.24	(1.04)	
6 months	1.15	(0.75)	1.19	(0.78)	
12 months	1.34	(0.82)	1.22	(0.76)	
18 months	1.37	(0.91)	1.19	(0.69)	
30 months	1.40	(0.89)	1.34	(0.96)	
Financial Stress					-0.12**
Baseline	3.19	(0.87)	3.24	(0.79)	
6 months	3.19	(0.87)	3.23	(0.88)	
12 months	2.94	(0.90)	3.16	(0.99)	
18 months	2.90	(0.95)	3.30	(0.96)	
30 months	2.80	(0.91)	3.15	(0.94)	

Note: †Dollars converted to 1993 constant dollars; ***p < .001; **p < .01; *p < .05

The first two variables in Table 1 are gross annual income in constant dollars and annual discretionary income in constant dollars. Both of these variables provide actual dollar amounts and are provided for descriptive purposes because they are easily interpreted markers of financial well-being. Reflecting the economics of separation for mothers, on the average neither group condition approached pre-separation levels of income after 2½ years into the study; in fact, their income reports basically dropped in half and never approached predivorce levels by the time of this report. Annual income in raw dollars *prior* to separation was $34,087 for the experimental and $29,996 for the controls; baseline levels in raw uncorrected dollars were $14,082 and $15,392, respectively. In terms of their rate of change in constant income over time, both groups steadily increased but the experimental group gained at a faster rate: ß = $1,289.56 ($p < .05$) of gross annual income and ß = $1,194.06 ($p < .05$) in discretionary money. Because the data in this

report spanned 2½ years, the linear slope coefficients translated to an average of over $3,223.90 more for the experimental group in annual income over the course of the study and $2,985.15 more in money above poverty.

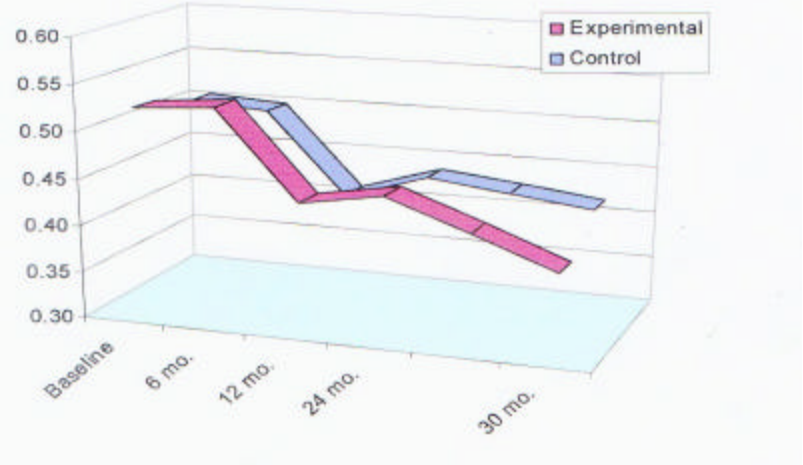

Figure 1. Changes in poverty threshold levels for two groups

Examining the poverty thresholds, roughly half of the sample in both group conditions was below poverty at baseline. After 2½ years, the proportion of families below poverty was reduced to 38% in the experimental condition and 42% in the control. Examining raw mean proportions, this represented a 14% drop in poverty in the experimental group compared to a 9% drop in the control. Again, parametric and nonparametric tests revealed no cross-sectional differences between groups for poverty threshold status. However, the rate of change revealed significant differences for the group slopes. For the specific test of change in poverty thresholds, we conducted the HLM Bernoulli estimation procedure for repeated measures of binary outcomes. That model showed a significant difference in the rate of change in poverty threshold. The improvement for the experimental group relative to the control was greater by 20% (ß = -.20 a year, $p < .05$); that is, the recovery from poverty was a 20% faster rate when looking at individual differences in trajectories. *Figure 1*. Changes in poverty threshold levels for two groups

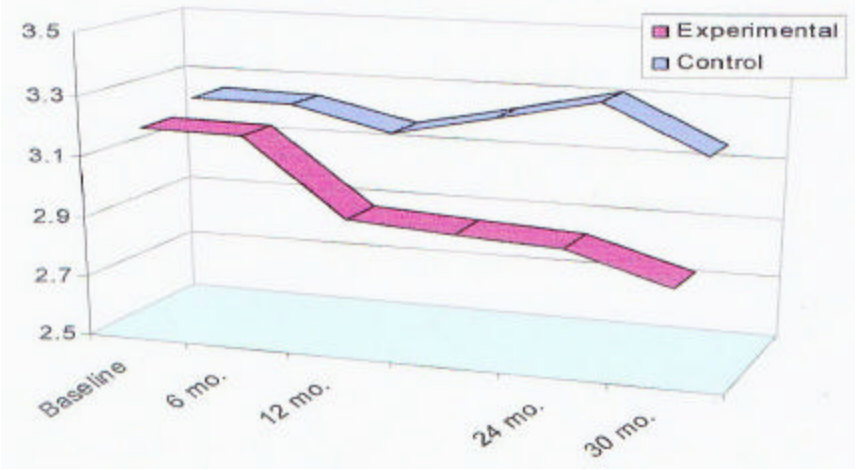

Figure 2. Changes in financial stress for two groups

We next focused on the multivariate analysis of the main dependent variables, which had greater specificity as measures of mothers' economic recovery. Recall that the income-to-needs ratio is defined as the annual income divided by that amount of income needed for a given family size to be above the poverty threshold. Thus, this measure of subsistence income takes into account annual income, family size, and poverty threshold, and reflects a more specified indicator of economic adjustment. Like the slow-paced financial recovery displayed for gross annual income, the income-to-needs ratio steadily increased over time for both groups. Again, there were no cross-sectional differences in the income-to-needs ratio but the group by time effect was significantly different for the two groups (ß = .10, p < .05). The income-to-needs ratio was increased by 25% more on the average for the experimental group over the span of this report. Financial stress showed a steady decline over time for both groups with a steeper decrease for the intervention group (ß = -.12 a year, p < .01). Cross-sectional differences occurred at both the 18- and 30-month follow-ups ($t = 2.74$, $p < .01$ and $t = 2.37$, $p < .05$, respectively). Figure 2 displays the differences in maternal reported financial stress over 30 months for the two groups.

Table 2- Unstandardized Beta Coefficients for Growth Model of Change in Income Needs Ratio and Change in Financial Stress (n = 191)

	Income-to-Needs Ratio	Financial Stress
Dependent Variable is Initial Status π_{0I}		
Intercept β_{00}	-0.172	3.055***
Divorce Filing Status β_{01}	0.263**	-0.108
Boys' Age β_{02}	-0.096	0.037
Mothers' Age β_{03}	0.022*	0.021
Months Separated β_{04}	-0.002	-0.014
Mothers' Education β_{05}	0.105***	-0.071**
Mothers' Occupational Prestige β_{06}	0.136***	-0.081***
Child Support (dollar amount × 10) β_{07}	0.000	-0.002**
Dependent Variable is Growth Rate π_{1I}		
Intercept β_{10}	-0.468	-0.077
Divorce Filing Status β_{11}	-0.039	-0.037
Boys' Age β_{12}	0.021	0.030
Mothers' Age β_{13}	0.005	-0.004
Months Separated β_{14}	0.001	-0.000

Group Condition β_{15}	0.083*	-0.107*
Repartnering (6 to 30 months) β_{16}	0.114	-0.219*
Working Hours (6 to 30 months) β_{17}	0.001	-0.002
Occupational Status (6 to 30 months) β_{18}	0.013	-0.021
Educational Status (6 to 30 months) β_{19}	-0.007	0.007
Child Support Awarded (6 to 30 months) β_{110}	0.000	-0.001*
Maternal Depression as Time Covariate π_{2I}	-0.007**	0.010***

***p < .001; **p < .01;*p < .05

We then tested the unique contribution of hypothesized predictors of initial status differences in the outcomes as well as unique predictors of growth. The first set of hypotheses focused on the contributions of changes in child support, working hours, repartnering status, and occupational prestige. Time-varying variables were entered as average levels of change for the follow-up assessment period from 6 to 30 months. The unstandardized beta coefficients are shown in Table 2 with three decimal places because scaling of predictors and outcomes produced small unstandardized coefficients.

Looking at initial status differences in the outcomes, as expected, controlling for mothers' depressed mood, both education and occupation were associated with higher scores on the income-to-needs ratio at baseline (β_{05} = .105, p < .001 for education and β_{06} = .136, p < .001 for occupation). Conversely, education and occupation were associated with lower levels of baseline financial stress (β_{05} = -.071, p < .001 and β_{06} = -.081, p < .001, respectively). Older mothers had a higher income ratio score at entry into the study (β_{04} = .022, p < .05), but age was not associated with lower reports of financial stress. Interestingly, the amount of child support received was not a unique predictor of the mothers' income-to-needs ratio but was a significant predictor associated with lower levels of financial stress (β_{07} = -.002, p < .05). The baseline child support was multiplied by a constant of 10 to show the effect at three decimal places. In other words, for every $1 in child support in the first year of the study, there was a reduction of .0002 units on the financial stress score. To reduce one full unit, the mother would need to receive on the average about $400 a month (that is, $4800 a year × .0002 = .96 or roughly 1). Finally, filing status was associated with higher levels of income-to-needs at baseline, meaning poorer mothers were less likely to officially file for divorce in the sample of separated mothers.

Focusing on evaluation of intervention effects, results showed a significant impact on financial resources over time independent of other divorce status and socioeconomic indicators hypothesized to predict growth in financial well-being. Controlling for maternal depressed mood, the experimental group increased in income-to-needs ratio (β_{15} = .083, p < .05) relative to the control group, and reported greater declines in financial stress (β_{16} = -.107, p < .05).

Repartnering, indicated by the number of new romantic, live-in partners that could have contributed to the mothers' household income, was not associated with gain in the income-to-needs ratio but was significantly associated with reductions in financial stress (β_{17} = -0.219, p < .05). This finding is noteworthy in that mothers' perceptions of stress reduced over time if they repartnered. At the same time,

the multivariate analysis indicated that mothers assigned to the experimental group experienced real increases in financial well-being that were not associated with establishing new romantic partners. The findings for child support payments were related to those findings for romantic partners. Receiving child support was associated with lower reports of financial stress (β_{16} = -.0001, $p < .05$) but not related to the income-to-needs ratio. In other words, child support did not account for real differences in growth in income but the mothers were less stressed if they received child support. Concerning the effects of depressed mood in each wave of data, the control variable for depressed mood was significantly associated with lower levels of income (π_{2i} = -.007, $p < .01$) and higher levels of financial stress (π_{2i} = .01, $p < .001$). Finally, although the post-intervention scores did not mediate the effects of the intervention on the outcomes in Table 2, we tested to see if there were intervention differences in education, occupation, and working hours post-intervention and found none.

For the next hypothesis, we wanted to see if changes in subsistence income accounted for the changes in financial stress by modeling the income-to-needs ratio as a time-varying covariate in the model of financial stress presented in Table 2. More specifically, we tested a mediational model to determine whether changes in income-to-needs accounted for the intervention effect associated with reductions in financial stress. As expected, growth in the income-to-needs ratio was significantly associated with decreases in financial stress (π_{2i} = -.303, $p < .001$). That is, controlling for depression, for every 1 unit increase on the income-to-needs ratio per year, there was nearly a one-third unit decrease in financial stress. In the model including income-to-needs as a predictor of financial stress, the intervention effect was reduced to nonsignificance. Thus, the intervention effect was mediated by changes in income-to-needs and accounted for the differences in reductions of financial stress between group conditions.

Having previously established intervention effects showing improvements in parenting practices and child adjustment that were a result of the parenting intervention, we then tested the final set of hypotheses evaluating whether benefits in parenting practices and indirectly child outcomes were associated with concomitant changes in standard of living. Neither changes in parenting practices nor child outcomes accounted for the intervention results on standard of living (results not shown).

Discussion

Children living in single-mother households have constituted a disproportionate share of the poverty population in this country for more than two decades (Duncan & Hoffman, 1985; McLoyd, 1998). The solution is not to encourage these mothers to get married, because even if the marriage results in a temporary respite from poverty, it is unlikely to endure (Bumpass & Sweet, 1989; Bumpass et al., 1990). For long-term benefits to these families, we must bolster the parenting and personal skills of mothers raising children on their own. This report suggests that providing single mothers with skills training in parenting and personal arenas can have benefits for the families in terms of parenting practices, child outcomes, and financial growth.

In the *Parenting Through Change* program (Forgatch, 1994), women improved their parenting skills, which in turn benefited their children's adjustment and their own adjustment. The child-rearing methods have been demonstrated effective in preventive and clinical programs using PMTO for samples of families with youngsters of all ages (Dishion & Patterson, 1992; Patterson, Chamberlain, & Reid, 1982; Reid et al., 1999). An added component in *Parenting Through Change* was to teach the women techniques expressly designed to profit their personal well-being. Previous reports indicated that mothers made predicted personal gains from the program, with reductions in depressed mood and financial stress (DeGarmo et al., 2004; Forgatch & DeGarmo, 2002). In the present study, we also found several fiscal benefits for mothers in the experimental group relative to their control counterparts.

As anticipated, families in both experimental and control conditions experienced some economic resurgence over the 2.5 years of the study; however, mothers in the experimental group reported a greater rise out of poverty than did their control counterparts. On the average, and using 1993 dollars, the experimental group dropped from about $8,100 pre-separation per capita annual income to about $5,000 at baseline, while the control group dropped from about $7,300 to about $4,700. These findings can be mapped onto Smock's data (1993), which used 1987 dollars. For both Smock cohorts, the per-capita income before disruption was roughly $8,000-9,000, and post separation was about $6,000-6,500, a decline of about 20%. The ODS sample experienced a decline of about 35%. Using the baseline and 30 month levels of annual discretionary income, the economic recovery was on the average $4,700 for the experimental group and $2,700 for the control group. Income-to-needs ratios showed an increase for experimental mothers relative to controls over the course of the study.

The HLM models enabled us to evaluate intervention effects on income-to-needs ratio and financial stress, taking appropriate controls into account (i.e., education, occupation, hours working, repartnering status, divorce status, child support, and maternal depressed mood). The intervention produced significant improvements on both dependent variables over the 30-month interval, with an increase in income-to-needs ratio and a decrease in financial stress. Higher education and occupational prestige were associated with beneficial effects on both dependent variables at baseline. Maternal ratings of depressed mood was a significant covariate of change in both dependent variables, with more depression positively related to increased financial stress and negatively related to improved income-to-needs ratio. Divorce status did not function as a predictor of change in the longitudinal analyses for either dependent variable. Other predictor measures displayed somewhat different patterns for the two dependent variables, suggesting that income-to-needs ratio and financial stress have reasonable discriminant validity. Baseline receipt of child support predicted lower baseline financial stress, and divorce status by baseline was related to baseline income-to-needs. Child support awarded remained a predictor of growth in financial stress but not income-to-needs ratio.

Recall that other studies found full economic recovery for mother-headed families with repartnering (Duncan & Hoffman, 1985; Smock, 1993). In our study, neither experimental nor control groups achieved full recovery, regardless of repartnering status, and we found no differential effects for mothers' rate of repartnering in experimental and control groups. The effect of repartnering operated on financial stress but not on actual income. This finding was somewhat puzzling. Perhaps women with cohabiting partners perceive their families to be more financially secure than mothers on their own, even though there is little if any difference in actual income. Another explanation may be that the measure of maternal income does not accurately assess financial resources brought into the relationship by the partner. Because the window of this report was only 30 months, the time to find repartnering benefits to income-to-needs ratio may have been too short. On the other hand, because repartnering tends to be temporary, it may not have a lasting effect on fiscal recovery.

Intervention programs using PMTO have repeatedly shown benefits to child outcomes. Investigators citing somewhat different theoretical backgrounds but employing some similar intervention procedures have demonstrated that teaching effective child rearing strategies to parents can turn children's negative trajectories into positive paths (Kazdin & Weisz, 1998; Taylor & Biglan, 1998). At the Oregon Social Learning Center, PMTO programs have yielded successful outcomes with families of chronically delinquent adolescents and their biological parents (Bank, Marlowe, Reid, Patterson, & Weinrott, 1991), in treatment foster care (Chamberlain & Reid, 1998), with families of preadolescent conduct disordered youngsters (Patterson et al., 1982), at-risk adolescent families (Dishion & Andrews, 1994), families of at-risk elementary-school-aged youngsters (Reid et al., 1999), recently separated single mothers (Forgatch & DeGarmo, 1999, 2002; Martinez & Forgatch, 2001), and recently married stepfamilies (Forgatch, DeGarmo, & Beldavs, 2005). With the exception of the single mother and stepfamily program, all of these studies used randomized assignment to the PMTO experimental

condition or to active contrast interventions. The ODS and stepfather programs used random assignment to experimental or no-intervention control. Some behavioral geneticists claim that parents, especially those with personality problems of their own, simply cannot make the changes necessary to help their children (Rowe, 2001). Such claims can lead to do-nothing policies, which would be unfortunate indeed given the availability of effective programs for disadvantaged samples (Brooks-Gunn et al., 1994; Huston et al., 2001; Salkind & Haskins, 1982).

Most published studies show intervention effects on outcome variables; some have demonstrated predicted effects on the presumptive mechanisms, but few have actually tested for and demonstrated an intervention's effect on mechanisms, which then alter the outcomes as expected. To achieve this, the theory must fit the practice, the intervention must be efficacious, the measurement must have sensitivity to change and predictive validity, and the mechanisms must produce the hypothesized effects. As Rutter and colleagues (2001) have noted, this level of theory building and testing requires extensive work. The ODS intervention established causal status for the parenting mechanisms because: (a) the rigorous randomized experimental design employed multiple-method and -agent assessment; (b) the intervention was conducted strictly with mothers so that changes observed in child behavior would have to come from the parents; (c) the intervention produced the expected effect on parenting practices; and (d) changes in the parenting practices produced the expected changes in child outcomes. At 12 months, the divergence between children's trajectories for the control and experimental was small, so that the child effects were produced indirectly through the program's benefits to parenting (Forgatch & DeGarmo, 1999). By 30 months, however, the difference in child outcome trajectories achieved statistical significance, and the program's direct effect on change in observed noncompliance was mediated fully by the intervention effect on parenting practices (Martinez & Forgatch, 2001). It has taken decades to conduct such an experimental test of a theoretical model in family research. Nevertheless, we see ourselves as in the early iterations of a long process in which we will come to better understand the interconnections between parents' roles in their adult lives (in intimate relationships, at work, with friends) and their roles as mothers and fathers.

Although the present study indicates a promising entrée, we were unable to identify the mechanisms that contributed to the fiscal benefits for experimental-group families. We tested 3 sets of variables that were significantly improved by the intervention as potential explanatory mechanisms for the intervention effect on income-to-needs and financial stress: benefit to parenting practices, reduction in maternal depression, and improved child outcomes. None of these proved to be mediators of the intervention effect on either financial stress or on income-to-needs ratio. Several potential predictors were not significantly affected by the intervention (e.g., maternal education, occupational prestige), and other possible predictors were not adequately measured (e.g., adult problem solving, social support). Nevertheless, there was an intervention effect on fiscal outcomes. Failure to understand precisely how the intervention produced financial benefits to this population at risk for poverty may make it difficult to replicate this finding. Of course, replication is essential since the personal adjustment module was novel to this PMTO intervention. Future studies that may replicate similar findings for fiscal benefits would do well to improve the theory and the assessment of presumed mechanisms and income outcomes.

Divorce takes families through a gradual process of multilevel adjustment, with changes beginning before physical separation and continuing indefinitely (Block, Block, & Gjerde, 1988; Chase-Lansdale, Cherlin, & Kiernan, 1995; Hetherington & Clingempeel, 1992). Each family must draw on existing strengths to find its course through the transitions ahead. Some start the journey with many resources; others start with few but gather wisdom along the way. The unlucky are endowed with little, find nothing but obstacles in their path, and slip into a steady decline. With approximately 50% of American families likely to make at least one divorce transition, we need programs that buttress strengths, augment skills, and offer the support necessary to manage the challenges they are likely to encounter. Lichter states well the long-term repercussions of ignoring the problems of children living in poverty:

"The effects of high rates of economic deprivation among today's children may only be fully realized by tomorrow's adults" (Lichter, 1997, p. 122).

Our rates of children living in poverty are high compared to other Western industrialized countries that range from 1.6% in Sweden to 9.3% in Canada (McLoyd, 1998). Now is the time to invest in our children's future by providing resources to poor families so that all our children can fulfill their potential. Such family support should come from programs with demonstrated effectiveness.

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Author Note

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Footnote

[1]We also compared the annualized monthly income to the mothers' reported gross annual income based on 9 income categories ranging from 1 (*less than $5,000*) to 9 (*more than $50,001*). To specify dollar amounts, categories were recoded to midpoints with first and last categories using $2,500 and $75,000 based on methods by Duncan et al. (1994) using the same categories. For the multivariate analyses, no substantive differences were found between annualized monthly and the binned categories. Therefore, we presented results using the measure with greater specificity.

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Appendix 1
Parenting through Change: Agenda

Week	Session Title & Content
1	**Working through Change:** Introductions to the intervention, each other, and role as *agents of change*, specifying goals, identifying strengths
2	**Encouraging Cooperation:** Giving good directives, recognizing children's cooperation and noncompliance, tracking behavior
3	**Teaching New Behaviors:** Parents as teachers, breaking goals into achievable steps, using small incentives to promote skill development,
4	**Setting Limits:** Providing small contingent negative sanctions for specific problem behaviors (time out backed up with privilege removal)
5	**Following Through:** Balancing encouragement with negative sanctions (5 positive to 1 negative); practice using encouragement and sanctions
6	**Promoting School Success:** Establishing school routines (standard study time & place, good setting, all family members in skill-building activities
7	**Communicating with Children:** Using active listening skills, lead in without dominating, using indirect ways to talk about feelings
8	**Observing Emotions:** Identifying specific emotions in oneself and one's children; recognizing differences between one's own emotions and others'
9	**Managing Emotions:** Strategies and practice in regulating negative emotions and promoting positive emotions
10	**Problem Solving:** Methods and practice in interpersonal problem solving, with family and separately with adults
11	**Managing Conflict:** Application of strategies from sessions 1, 3, 7, 8, 9, and 10 for interpersonal conflict within and outside of the family
12	**Monitoring Children's Activities:** Identifying methods to find, assess, and check in on safe and appropriate childcare arrangements
13	**Building Skills:** Application of strategies to multiple living circumstances, family and personal skills development
14	**Balancing Work and Play:** Importance of self care, attention to developmental challenges ahead, troubleshooting, review