

## How Money Matters for Young Children's Development: Parental Investment and Family Processes

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This study used data from the Panel Study of Income Dynamics and its 1997 Child Development Supplement to examine how family income matters for young children's development. The sample included 753 children who were between ages 3 and 5 years in 1997. Two sets of mediating factors were examined that reflect two dominating views in the literature: (1) the investment perspective, and (2) the family process perspective. The study examined how two measures of income (stability and level) were associated with preschool children's developmental outcomes (Woodcock-Johnson [W-J] Achievement Test scores and the Behavior Problem Index [BPI]) through investment and family process pathways. Results supported the hypothesis that distinct mediating mechanisms operate on the association between income and different child outcomes. Much of the association between income and children's W-J scores was mediated by the family's ability to invest in providing a stimulating learning environment. In contrast, family income was associated with children's BPI scores primarily through maternal emotional distress and parenting practices. Level of income was associated with W-J letter-word scores and income stability was associated with W-J applied problem scores and BPI, even after all controls were included in the models.

### INTRODUCTION

Family income is associated with the development of children and youth, as countless studies have demonstrated (Brooks-Gunn & Duncan, 1997; Duncan & Brooks-Gunn, 1997; Haveman, Wolfe, & Spaulding, 1991; Huston, McLoyd, & Garcia Coll, 1994; Jencks & Phillips, 1998; Keating & Hertzman, 1999). Recent research raises issues as to whether family income was associated with children's outcomes; whether timing, extent, and depth of poverty were important; and whether family income had a similar effect on children's school achievement, behavior, and health outcomes (Duncan & Brooks-Gunn, 1997; Duncan, Yeung, Brooks-Gunn & Smith, 1998; Mayer, 1997).

Scholars disagree about the causality and effect size of family income on children's outcomes, pointing to concerns about the selection bias in the analysis due to typically unmeasured factors such as parental mental health, abilities, and attitudes that may cause parents to have low income as well as impede their children's life chances. Mayer (1997), using an instrumental-variable approach in her attempt to control for unobserved heterogeneity, concluded that family effect on children's outcomes was, to a large extent, spurious. Her work, however, had two limitations: (1) her analysis did not include family income during early childhood, and (2) as Mayer herself pointed out, instrumental variables are not without problems as many of them are potentially correlated with family income. Duncan and Brooks-Gunn (1997), drawing from results of a dozen longitudinal studies, suggested that income effects were statistically signifi-

cant for children's outcomes. Duncan et al. (1998), capitalizing on the fact that siblings share many family characteristics, used a sibling analysis to reduce selection bias. Family income at early childhood, particularly deep and persistent poverty, had a significant long-term effect on children's educational attainment.

Despite disagreements about causality and effect size, some consensus has emerged from the literature on child poverty. First, recent studies based on the National Longitudinal Survey of Youth–Child Supplement (NLSY-CS), Infant Health Development Program, and the Panel Study of Income Dynamics (PSID) have shown that income effects are strongest during the preschool and early school years (Duncan, Brooks-Gunn, & Klebanov, 1994; Duncan et al., 1998; Smith, Brooks-Gunn, & Klebanov, 1997). This early childhood effect has been found to be particularly significant when low income is persistent, and when poverty is deep. Second, work in this area has demonstrated that income has a differential effect on distinct children's outcomes, generally exhibiting a stronger effect on children's school and cognitive achievement than on children's social and emotional development (Duncan & Brooks-Gunn, 1997; Haveman & Wolfe, 1995).

There is a substantial gap in the literature linking income and children's outcomes in understanding the processes by which childhood economic conditions affect children; that is the pathways that mediate the association between income and child well-being. This

gap limits our ability to explain why income matters, when income matters, and why it has a stronger effect on children's cognitive achievement than on behavior. The purpose of this article is to focus on familial processes that may fill this gap. Two main perspectives have emerged in the literature to explain how income matters for children's development. One focuses on the effect of income through a family's ability to invest resources in children's development, and the other emphasizes the effect of income through parents' emotional well-being and parenting practices.

The first perspective posits that income enables families to purchase materials, experiences, and services to invest in building the human capital of their children. These goods and services include schools, child care, food, housing, stimulating learning materials and activities, neighborhood environment, and medical care. According to this perspective, children in families with lower income tend to fare worse because they have limited access to resources that help them develop. Terms for this perspective include human capital, financial resources, or investment model (Becker & Thomes, 1986; Haveman & Wolfe, 1994; Mayer, 1997); the term parental investment will be used in this article to capture the mediating process of income.

Economist Becker and colleagues view children's economic success as a combination result of the biological endowment that parents pass to their children and the resources, in the form of money and time, that parents invest in their children (Becker, 1981; Becker & Thomes, 1986). Investment in children's learning environment is considered to be a main determinant of children's economic success, whereas investments in health care, quality home environments, advantaged neighborhoods, and other goods and services also enhance children's well-being. Smith et al. (1997), drawing on data from the NLSY-CS and Infant Health and Development Program, found that children in families with incomes less than half of the poverty line (government estimates of the level of income that is sufficient for a family of certain composition to not live in poverty) scored between 6 and 13 points lower on the various standardized tests than did children in families with incomes between 1.5 and 2 times the poverty line. They attributed the income effect, to a great extent, to the ability of higher income families to provide a richer learning environment for their children.

Mayer (1997), in her analysis of the income effects on children's life chances based on data from the PSID and NLSY, demonstrated that poor children lived in worse conditions, spent less on food, owned fewer stimulating toys, and were less likely to engage in stimulating activities. After controlling for other

family background characteristics, family income and these resources (food, toys, and activities) were associated with children's outcomes (Mayer, 1997). In most cases, though, the effect size of income is small. Doubling family income from \$15,000 to \$30,000 increased household living conditions and children's possession of materials enough to increase years of higher education by about .15 years, and increased Peabody Picture Vocabulary Test scores by .91 for 4- to 5-year-olds. Even though the small effect sizes led her to conclude that family income effect is mostly spurious, Mayer's analysis illustrates the potential mediating pathway of income effect through materials and services that parents provide for children.

A second perspective seeks to explain the income effect through its impact on family processes. In contrast to the investment perspective, this perspective posits that low family income is posited to be detrimental to children's development because of its association with parents' nonmonetary capacities, such as their emotional well-being and interactions with their children, which in turn are related to children's outcomes. An example of a well-developed theoretical model to explain how family process mediates income effect is one that has been called the family stress, family process, or psychological model (R. D. Conger & Elder, 1994; Elder & Caspi, 1988). We use the term family stress perspective in this article. Several researchers have suggested that economic hardships affect parents' psychological well-being adversely; psychological distress, in turn, leads to less supportive parenting practices, which ultimately have a negative effect on children's development (R. D. Conger et al., 1992; R. D. Conger, Patterson, & Ge, 1995; K. J. Conger, Rueter, & R. D. Conger, 2000; McLoyd, 1990). Economic conditions and hardship include low family income, unstable work, and income loss. Specifically, these objective economic conditions and subjective perceptions of family financial strain make it necessary for families to cut back on consumption of goods and services, seek public assistance, make changes in living arrangements, or secure additional employment for supplementary income (R. D. Conger & Elder, 1994; Edin & Lein, 1997; Yeung & Hofferth, 1998). These hardships are hypothesized to increase maternal emotional distress, which, in turn, is associated with an increase in punitive parenting practices. Empirical work has demonstrated that economic hardship diminishes parental abilities to provide warm, responsive parenting and contributes to an increase in the use of harsh punishment (McLoyd, Jayaratne, Ceballo, & Borquez, 1994; Sampson & Laub, 1994; Smith & Brooks-Gunn, 1997). Warm, noncoercive parenting behavior seems to buffer children from

some of the negative consequences of economic hardship (Mosley & Thomson, 1995).

The fact that parenting behavior may be a central mediator between poverty and child outcomes is a critical component of the family stress perspective. Parenting practices influence both children's cognitive achievement as well as behavior problems in early years (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Deater-Deckard, Dodge, Bates, & Pettit, 1996; Landry, Smith, Miller-Loncar, & Swank, 1997). Hanson, McLanahan, & Thomsen (1997), however, found that family income and debt were only weakly associated with effective parenting. Mayer (1997) also pointed out that the effect sizes reported in the literature are generally small. Her own analysis provided little evidence that family income had a large effect on parents' psychological well-being or parenting practices; her analyses did not demonstrate that parenting practices accounted for much of the effect of income on children's school performance.

The family stress perspective has been used most frequently to examine behaviors of adolescents (K. J. Conger et al., 2000; McLoyd, 1989). Elder's classic work on the Great Depression started with youth and was extended later to early childhood (Elder & Caspi, 1988), although less work of this genre has followed with younger children. This is puzzling, because associations between low family income and children's development are, if anything, stronger for young children than for adolescents (Duncan & Brooks-Gunn, 1997; Korenman, Miller, & Sjaastad, 1995). Research on young children's development, low income, parenting behavior, and emotional stress exists (Jackson, Brooks-Gunn, Huang, & Glassman, 2000), although few researchers have combined these constructs via the family stress model with samples of younger children, as Elder and Caspi (1988) have done.

Based on the work reviewed above, we hypothesized that factors in the investment perspective, as well as maternal emotional well-being and parenting practices in the family stress perspective, would mediate the association between income and child well-being—but that the mediating processes would differ for cognitive achievement and behavior problems. We expected stimulating learning environment and experiences to have a stronger association with children's cognitive achievement than with children's behavior problems. On the other hand, we expected factors associated with the family stress perspective to be more strongly related to children's behavior problems than to their cognitive achievement. We based this prediction on the findings of the Conger group's results from work with an adolescent sample, as well as from other studies that tested the effects of

income on young children (K. J. Conger et al., 2000; Dodge, Pettit, & Bates, 1994). In addition, we hypothesized that constructs in both perspectives might interact with each other, and therefore should not be analyzed in isolation. More depressed parents may be less likely to actively engage in activities that promote children's investment, such as helping a child with homework or engaging a child in reading or rich conversation. Conversely, investment variables that are conducive to children's development, such as a stimulating home environment and quality day-care, can benefit parents' psychological well-being and parenting behavior.

Existing literature on the mediating processes of income on children often focuses on one of these two frameworks. These mediating mechanisms are often addressed separately, with researchers focusing on parenting practices (R. D. Conger, Conger, & Elder, 1997; Hanson et al., 1997), cognitive stimulation (Klebanov, Brooks-Gunn, McCarton, & McCormick, 1998; Smith et al., 1997), or services provided to children (e.g., Leventhal, Brooks-Gunn, McCormick, & McCarton, 2000; NICHD Early Child Care Research Network, 1997). A notable exception is the recent work by Guo and Harris (2000) that examined the mediating factors postulated in both the family stress and investment models vis-à-vis children's cognitive achievement. As these authors noted, a simultaneous consideration of factors from both perspectives helps to identify effective ways to improve the well-being of children in poor families. Limitations of the Guo and Harris article, however, are inherent in the dataset they used for their analyses—the NLSY-CS. The NLSY-CS overrepresents children born to younger, less highly educated, and minority mothers (Chase-Lansdale, Mott, Brooks-Gunn, & Phillips, 1991). Most importantly, several key constructs in the family stress model—namely economic pressure and maternal emotional well-being—are missing in the NLSY-CS.

In the present study, we used a relatively new national dataset, the PSID-Child Development Supplement (PSID-CDS), to explore the potential mediating pathways of income on children's well-being. Three research questions guided our analyses: (1) To what extent is the effect of income mediated by family's ability to invest in materials, services, and a home environment that are conducive to children's cognitive and emotional well-being? (2) To what extent is the effect of income mediated by the strain that economic hardships place on maternal emotional distress and parenting practices? and (3) Are there different mediating factors in the pathway linking income and children's cognitive achievement and behavior?

We extended research on the mediating pathways

of income in the following ways. First, crucial theoretical constructs in the family stress perspective, such as economic strain and maternal emotional distress, were incorporated to test the hypothesized mediating pathways. These constructs are absent from existing empirical research that used the data in NLSY-CS.

Second, the mediating processes of income on both children's cognitive achievement and children's behavior problems were examined to investigate the potentially different mediating process for different child outcomes. We hypothesized that the mediating pathways for children's achievement and behavior problems are different. A family's ability to purchase cognitively stimulating materials and experiences is more directly relevant to children's cognitive achievement, whereas maternal psychological well-being and the emotional support of parents may be more directly linked to young children's emotional well-being. Considering both child outcomes may provide insights into whether different policy measures are necessary for enhancing different aspects of children's well-being.

Third, the family stress perspective was applied to a national sample of young children. Previous research on family stress perspective has, in large part, examined income effects on local samples of adolescents (R. D. Conger et al., 1992; McLoyd, 1989). Thus, generalizability of the model is limited. Few researchers to date have tested all the mediating pathways proposed in the present study on a sample of young children (see for exceptions, Elder & Caspi, 1988; Jackson et al., 2000).

Fourth, the utility of the potential mediators pro-

posed in both perspectives to explain the association of income and child outcomes was compared. To do so, we tested the family stress perspective and the investment perspective in separate models. In addition, we estimated a larger model that incorporated all mediators from both perspectives simultaneously. Figure 1 depicts the conceptual framework of our proposed model in which family income affects children's development through maternal psychological well-being and parenting practices as well as materials and experiences that are conducive to children's learning. The family stress factors were hypothesized to be more salient mediators for children's emotional well-being, whereas the investment mediators were posited to be more important for predicting children's cognitive development.

The present study focused on how income is associated with children's well-being during the early years, given that income effects may be strongest in early childhood, and that developmental problems in early childhood are often precursors of problems in later life (Furstenberg, Brooks-Gunn, & Morgan, 1987; Miller & Korenman, 1994; Shonkoff & Phillips, 2000; Tremblay, 2000).

## METHOD

### Participants

To test our models, we used data from the 1993–1997 waves of the PSID and the 1997 CDS to the PSID. Strengths of the PSID include reliable annual income data dating back to child's birth, a nationally

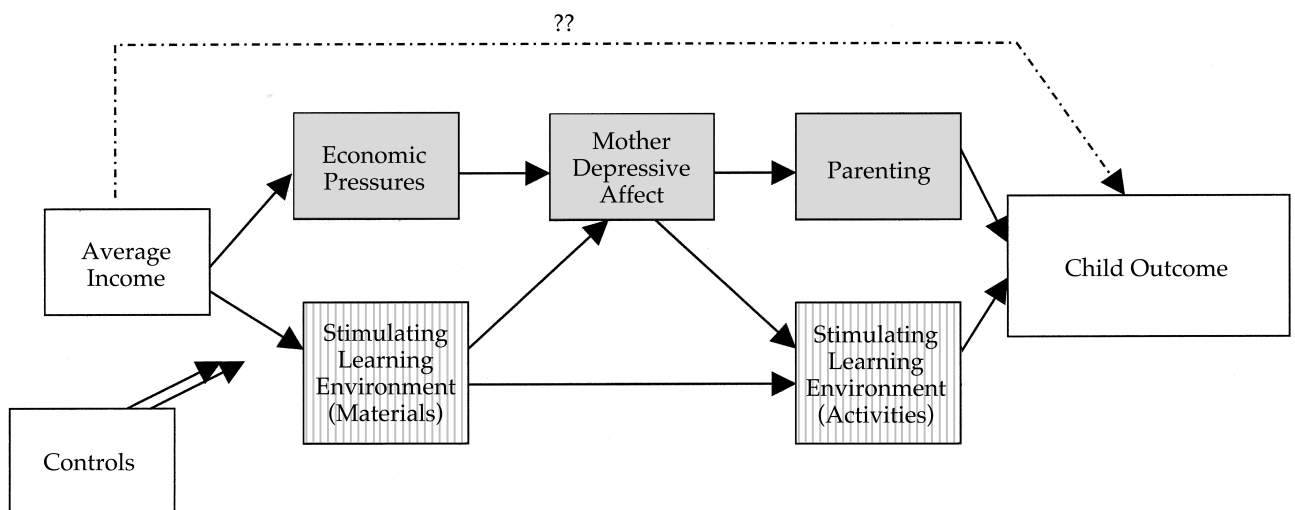


Figure 1 Combination of human capital mediators (striped shading) and family stress mediators (dark shading) models.

representative sample, and an extensive set of measures of family processes and child assessments in the CDS that allowed us to examine both family stress and parental investments as mediators of income effects on children. The PSID, begun in 1968, is a longitudinal survey of a representative sample of U.S. men, women, and children, and the families in which they reside. Data on employment, income, wealth, housing, food expenditures, transfer income, and marital and fertility behavior are collected annually. In 1997, the PSID supplemented the existing longitudinal study with the CDS, collecting information on parents and their children from birth to age 12 (Hofferth, Davis-Kean, , & Finkelstein, 1997). This rich dataset includes a wide range of family process measures as well as measures of child and mother cognitive ability and emotional well-being. Parents in the core PSID sample with children between birth and age 12 years were recruited to participate in the CDS. If there were multiple children within the age range, two were randomly selected to be target children.

The full CDS sample includes about 3,500 children. The present study used data collected from the child and the primary caregiver. The integrated PSID-CDS dataset provides high-quality annual measurements of family income history and a wide range of family process measures and child assessments for a national sample of children. The sample for our analyses included 753 children in the CDS who were between ages 3 and 5 years at the time of the 1997 CDS interview. (Full information on PSID-CDS methodology and measures can be found on their Web site: <http://www.isr.umich.edu/src/child-development/home.html>.)

## Measures

Table 1 presents the constructs used in our analyses, with the unweighted means, standard deviations, number of observations, and range of each. Included in the study were measures of child well-being; family income; investment mediators; family stress mediators; and a battery of child, mother, and family controls. Although family income was measured in years prior to 1997 dating back to the child's birth, home environment and resources, parenting practices, and mother's depressive affect were measured concurrently with children's cognitive achievement and behavior. These measures are described below (more detailed information on all scale items is available from the authors on request).

*Child well-being.* In the present study, two achievement outcomes and one behavior problem outcome were examined. Cognitive achievement was assessed

through the Woodcock-Johnson Achievement Test-Revised (W-J; Woodcock & Johnson, 1989). As the name of the test suggests, the W-J test is a measure of children's achievement, not IQ. Two age-standardized subscales were used in the present study: applied problems and letter-word. Externalizing behavior problems were assessed through mothers' reports with the short version of the Behavior Problem Index (BPI; Achenbach & Edelbrock, 1981, 1984). The externalizing behaviors subscale, which contains 16 items (e.g., child cries too much; child bullies others; child is disobedient) was used in the present study. Cronbach's  $\alpha$  for the scale in the present study is .86. For a detailed description of the measures used for children's achievement and behavior problems, see the User Guide for the PSID-CDS (Hofferth et al., 1997). Children's internalized behavior problems were found to be unrelated to family income after controlling for the demographic characteristics in the preliminary analysis; hence, this subscale was not included in the analyses for this article.

*Income measures.* Our income measure was the total pretax income of all family members, inflated to 1997 price levels using the Consumer Price Index (CPI-UX1) and averaged over all of the years since the child's birth through 1996, 1 year prior to the time child well-being was assessed. These data were drawn from the annual reports of family income collected in the 1993–1997 waves of the PSID. We used income from multiple years because single-year measures of income are not particularly reliable given yearly fluctuations (Duncan et al., 1994). The average family income variable used in our analysis was scaled in \$10,000s and top coded at \$200,000. We chose not to use a frequently used size-adjusted measure of family income—the “income-to-needs” ratio—because we wanted to distinguish the effect of family size from that of family income. We also constructed two other variants of total family income to assess the nonlinearity of income effects: a logarithmic transformation of family income, and a series of dummy variables representing different levels of family income. Because we did not observe any nonlinear income effects, results using these measures are not reported.

We incorporated an indicator of income instability in our analyses to observe separate effects of family income change over time as opposed to absolute level of family income. Income instability is measured by the proportion of years since the child was 1 year old in which the family experienced a 30% or more decrease in total family income in the prior year. Income loss from the year the child was born to age 1 was omitted, to avoid capturing the potential decrease in maternal income surrounding the birth of a child.

**Table 1** Means, SD, N, and Range of All Model Constructs

	<i>M</i>	<i>SD</i>	<i>N</i>	<i>Range</i>
Child well-being				
Woodcock-Johnson applied problems (age standardized)	99.95	18.51	563	28–159
Woodcock-Johnson letter word (age standardized)	98.52	14.39	569	49–153
Externalizing Behavior Problem Index	23.90	5.67	707	16–47
Income constructs				
Average family income (in \$10,000)	4.1	3.3	753	.1–20.0
Income instability	.21	.33	744	0–1
Investment model				
Home environment	3.21	.91	591	0–4
Cognitively stimulating materials	.02	3.42	716	–14.14–6.31
Mean monthly child-care cost (in \$100)	1.98	1.04	486	.4–4
Activities with child	1.59	.65	728	0–3.29
Family stress model				
Economic strain	.08	1.75	435	–1.96–5.54
Maternal depressive affect	.66	.61	450	0–3.90
Warm parenting	2.51	.90	591	.11–4.00
Spanking index	1.55	.86	706	0–4
Demographic controls—child				
Age	4.01	.80	753	3–5
% Girls	.45		753	0–1
Race				
% White	.49		750	0–1
% Black	.45		750	0–1
% Other	.06		750	0–1
% Low birthweight (under 2500 grams [5.5 lbs.])	.10		732	0–1
Demographic controls—mother				
Age	32.60	8.38	738	17–83
Completed education	12.93	2.12	734	5–17
Cognitive ability	30.82	5.48	606	11–43
Demographic controls—family				
Family size	4.01	1.25	753	2–11
Family structure				
% two biological / adoptive parents	.60			0–1
% Mother and stepfather	.06			0–1
% Single mother	.29			0–1
% Other structure	.05			0–1
% in metropolitan statistical area	.74		752	0–1
Region of country				
% South	.54		752	0–1
% Midwest	.23			0–1
% Northeast	.10			0–1
% West	.12			0–1

Note that 20% of the sample experienced steep decreases in income in at least 1 year between ages 1 and 3 to 5.

*Constructs in the investment model.* We used two categories of indicators to measure family's investment in a child's development. The first group of indicators captured the materials and services that income enabled the family to purchase for the child, including the physical home environment, child-care cost, and cognitive stimulating materials provided to the child at home. Access to medical insurance and

parent's perception of the quality of the neighborhood were also examined, but were later eliminated from the analysis due to large measurement errors. The second group, distinct from the purchasing power of income, captured parents' investment in the form of time spent with the child in stimulating activities that enhance a child's development. Including both sets of measures allowed us to distinguish the effect of monetary versus time investments of parents.

The physical environment of the home was assessed with four items from the Home Observation

for Measurement of the Environment (HOME); a subset of the full HOME scale (Bradley & Caldwell, 1980; Bradley, Casey, & Caldwell, 1997; Bradley et al., 1994) was administered in the PSID-CDS. Interviewers rated four aspects of the physical environment of the home, assessing the extent to which the home was cluttered, monotonous, safe (reverse coded), or clean (reverse coded). The four physical environment items were averaged to form a scale (Cronbach's  $\alpha$  was .76). This scale measured a mixture of parental investment of both money and time in the sense that poor housing conditions are usually less safe and more monotonous, whereas a clean and organized home requires either parental time or money to purchase help with these tasks. An advantage of these measures in the PSID-CDS over those in other surveys is that they were measured on 5-point Likert scales, whereas in other studies they were often reduced to 1/0 variables. The scale ranged from 0 = very cluttered/monotonous/not at all clean/not safe to 4 = not at all cluttered/monotonous/very clean/safe. For analyses using HOME items in the present study, we made an effort to keep variability of responses intact, so we used the full range of responses in all subscales created from the HOME items.

Child-care cost was included in our analyses as another indicator of the financial investment in the child. This variable captures the financial resources that a family allocates to an environment outside of the home for a child's development. Previous research demonstrates that family income is a significant determinant of the quality of nearly all child-care environments (NICHD Child Care Research Network, 1997). Although child-care cost does not completely capture the quality of the child-care environment, it has been found to correlate moderately with the quality of care (NICHD Child Care Research Network, 1997). The PSID-CDS included a battery of questions about the child-care history for each child. Primary caregivers reported, for each child-care arrangement, how often the child attended, for how long, and how much the household paid for the service. We calculated the average monthly cost for each child-care arrangement used for a child and obtained an average cost over the last five child-care arrangements (fewer than 1% reported more than five child-care arrangements). Monthly costs were bottom coded at \$40 and top coded at \$400, and scaled in \$100s for all analyses.

Cognitively stimulating materials provided to children at home were measured with three items from the HOME scale as well as one additional item, all reported by the primary caregiver. HOME items included how many books the child had (0 = none, 4 = 20 or more); whether the child had the use of a

compact disc (CD) or tape player and at least five CDs or tapes (0 = no, 1 = yes); and how many things, of numbers, alphabet, colors, and shapes/sizes, the primary caregiver used to help the child learn at home (0 = none, 4 = all). The fourth item in the cognitively stimulating materials scale was how many newspapers and magazines the family received regularly (0 = none, 2 = 3 or more newspapers/magazines). This last item is a rough indicator of family engagement in everyday literacy activities, expected to be an important vehicle for parents to transmit human capital to their children. To create the cognitive stimulation subscale in the present study, we standardized each item using  $z$  scores and then took the mean of the items. Reliability of the subscale was moderate (Cronbach's  $\alpha$  was .56).

The nonmonetary investment construct included in the present study was a measure of parent's activities with the child. This scale was comprised of seven items; one, taken from the HOME, asked the primary caregiver how often a family member had taken the child to a museum in the past year (0 = never, 4 = more than once a month). The other six items included parent's report of doing various activities with the child, such as reading books or stories, playing sports, doing a puzzle, playing on a computer, or building something together (0 = not in past month, 4 = every day). The scale was formed by taking a mean of all seven items (Cronbach's  $\alpha$  was .67).

*Constructs used in the family stress model.* These constructs included economic pressure, mother's depressive affect, and parenting. Economic pressure was measured with a modified version of a scale created by Conger and colleagues (R. D. Conger et al., 1997). Mothers were asked one question about economic strain of the family, "At the end of the month, do you end up with some money left over, just enough to make ends meet, or not enough money to make ends meet?" Responses ranged from 1 = some money left over to 3 = not enough to make ends meet. Mothers also reported on 15 economic adjustments the family had to make in the last year because of economic problems, such as "postponed major purchases," "borrowed money from friends or relatives," "fell behind in paying bills," and "moved to cheaper living quarters." The 15 potential responses were summed to create a single variable that reflected how many adjustments occurred (Cronbach's  $\alpha$  for the Economic Adjustment scale was .63). Economic strain and adjustments were standardized and summed to create the economic pressure construct.

Maternal emotional affect was assessed with the Composite International Diagnostic Interview (CIDI; Kessler & Mroczek, 1994). Mothers responded to 10

questions, all prefaced by "During the past 30 days, how often did you. . . ." Example items include "feel tired out for no good reason," "feel depressed," "feel nervous," and "feel worthless." Responses were made on a Likert scale ranging from 0 = none of the time to 4 = all of the time. The maternal depressive affect construct was created by taking the mean of all items (Cronbach's  $\alpha$  was .90). This construct does not measure depression in a clinical sense, but rather mother's depressive affect or emotional distress.

To capture more fully the parenting practices of the mother, we used both positive and negative parenting constructs: warm and punitive parenting. The warm parenting construct was comprised of nine observational HOME items. These nine items were rated by the interviewer, who observed interactions between the child and his or her primary caregiver during the interview. Sample items include how often the primary caregiver spontaneously spoke/conversed with child; spontaneously praised child; provided toys/interesting activities; and caressed, kissed, or hugged child; responses on most items ranged from 4 = often to 0 = never. The warm parenting construct was created by taking the average of all nine items (Cronbach's  $\alpha$  was .88).

A spanking index was created from two distinct self-reported items and two observational items as an indicator of punitive parenting behavior. First, mothers were asked whether they ever spanked the child and how old their child was at their first spanking. Responses were coded into three categories: 0 = never, 1 = started spanking when child was older than 1 year, and 2 = started spanking when the child was 1 year old or younger. The second item used in the punitive parenting construct reflected mother's disciplinary practices. Mothers were asked, "Most children get angry at their parents from time to time. If your child got so angry that he/she hit you, what would you do?" Mothers could then select all that applied from nine responses. Two involved corporal punishment (hit child back, spank child); if either or both of these categories was selected, the responses were coded as "1." If the corporal punishment categories were not selected, any other response (e.g., send child to room; give child household chores; talk to child; ignore it) was coded as "0." The observational HOME items were rated by the interviewer, who observed primary caregiver-child interactions during the interview. The two items were "primary caregiver slapped or spanked child" (0 = never, 1 = ever), and "primary caregiver physically restricted or shook/grabbed child" (0 = never, 1 = ever). The spanking, discipline, and observational HOME variables were summed to form the punitive parenting construct.

*Demographic controls.* An extensive battery of control variables was used in the present study including child's characteristics, mother's characteristics, and family characteristics that may be associated with child's achievement and behavior. Characteristics of the child included age, gender, race, and low versus normal birthweight. We controlled for mother's characteristics by including her age, years of completed education, and her cognitive ability measured with a passage comprehension score. Other family characteristics included family structure, family size, region of residence, and whether the family resided in a metropolitan area.

Age of child ranged from 3 to 5 years. Child gender was coded as 0 = boy and 1 = girl. Child's race was dummy coded into three categories: White, Black, and Hispanic/Asian/Other; White was the omitted category for all analyses. Low-birthweight status of the child served as a rough proxy for child's health. This variable was coded as 1 = low birthweight ( $\leq 2500$  grams [5.5 lbs.] at birth) or 0 = birthweight  $> 2500$  grams [5.5 lbs.].

Maternal education measured the years of mother's completed schooling, where 12 years was equivalent to a high school degree. Mother's (primary caregiver's) age ranged from 17 to 83. Mother's cognitive ability was assessed with a passage comprehension test from the W-J Achievement Test-Revised at the time of the CDS interview. Raw scores on the test ranged from 11 to 43. Family size ranged from 2 to 11. Family structure was coded into four dummy variables: two biological/adoptive parents, biological/adoptive mother with stepfather, single mother, and other family structure; two biological/adoptive parents was the omitted category for all analyses. Metropolitan statistical area (MSA) was measured as 1 = MSA (urban) and 0 = non-MSA (suburban/rural). Region of the country was dummy coded into four categories: South, Midwest, Northeast, and West. South was the omitted category for all analyses.

### Analysis Plan

For analyses in the present study, we used structural equation modeling (SEM) which allows for simultaneous tests of all the associations between constructs (Schumacker & Lomax, 1996); the direct and indirect associations of all predictors can be assessed while taking into account a variety of control variables. We used the Amos (Analysis of Moment Structures) program (Arbuckle & Wothke, 1999); Amos uses the maximum likelihood (ML) method for estimating parameters (Bollen, 1989). In ML estimation, to obtain the parameter estimates, a log function of



model parameters is calculated from the raw data (Arbuckle, 1996). Amos is unique among SEM statistical programs in that it allows models to be estimated even when there are missing data in model variables (Kline, 1998). The total number of observations in the present study was 753, with missing data in some variables; Table 1 lists the available number of observations for each variable included in the analyses.

Several of our study variables had a significant amount of missing data. This problem is inherent in a secondary-data analysis of a national dataset. The cognitive tests, for example, required the interviewer to be in the home with the child; some questionnaires were administered over the phone. Even in cases in which the interviewer was in the home, the child did not always complete the cognitive test battery. Several of the mediating variables used in the present study were in a self-administered booklet that the primary caregiver mailed back to the study center when the booklet was completed. Unfortunately, this set of booklets (and all the questions contained in them) had a much lower response rate. (More details on missing data and data collection procedures can be found on the PSID-CDS Web site.)

We were concerned about the missing data in the study, and ran *t* tests to determine the extent to which those participants who were missing data on key mediator or outcome variables were different than those who were not missing data. Several patterns emerged. For both cognitive outcome variables, those participants who had missing data on this score were less likely to be of Other race (compared with White or Black), to have mothers with a lower level of education, to be younger, and to be from the South. Those participants who had missing data on the letter-word test score were additionally more likely to have a stepfather in their home; those who had missing data on the applied problems score were less likely to come from a two-parent home. Those mothers who had missing data on the maternal emotional affect (CIDI) score and economic pressure scale were more likely to be Black, had lower passage comprehension scores, and were less likely to be from the West. In addition, those mothers who had missing data on the maternal emotional affect score were more likely to be in a home with a stepfather, and were more likely to be from the Midwest region of the country. Note that in all our analyses, we controlled for these demographic characteristics.

We considered the option of leaving out families who had missing data on the mediators. Had we done so, however, we would have been assuming that all data were missing completely at random (MCAR; Rubin, 1976), a very stringent requirement

for missing data. Because we found some patterns within the missing data, we ruled out the assumption of MCAR. We accounted for our missing data in two ways. First, we controlled for all variables that were related to patterns of missing data in all analyses. Second, we analyzed our data with the Amos SEM program, which uses the ML estimation technique; ML involves estimation of the parameters of the SEM while taking into account all the available data (McArdle & Hamagami, 1996), and assumes data are missing at random (MAR), a less stringent assumption than MCAR (Rubin, 1976). Even when data are not MAR, Amos performs better than techniques such as regression, in which cases with missing values are dropped from the analysis (Arbuckle, 1996).

To test the effects of income on child outcomes, we considered separate models for each child outcome. Only observations with valid data on a particular child outcome are included in the analyses for that outcome. We estimated a series of SEMs that tested the mediating roles of both the investment and family stress models. Our first model included only child characteristics and family income. Our second model added other family demographic control variables; we termed this our "baseline model." Next, we added constructs relevant to the investment perspective to the baseline model, including physical environment of home, cognitively stimulating materials and activities, and child-care cost. Subsequently, we added constructs relevant to the family stress perspective to the baseline model, including economic pressure, maternal depressive affect, and parenting practices. Finally, we estimated a full model, including all mediators from family stress and investment models.

## RESULTS

All analyses were conducted with unweighted data. In preliminary analyses, we conducted stepwise regression analyses with both weighted and unweighted data predicting all child outcomes; we found that the results were similar for the weighted and unweighted samples. In the present study, we first compare how family income was associated to all child outcomes in each model (baseline, investment, family process, and full models). Overall model fit is discussed and individual parameter estimates for the full model, for all child outcomes, are presented.

### Income and Child Well-Being

The association of income and all child outcomes and summary statistics of each model are presented in Table 2. As illustrated in the first row of the table,

**Table 2** Unstandardized Coefficient Estimates of Average Family Income on Child Well-Being: Summary of Structural Equation Models Tested: Baseline, Investment, Family Stress, and Full Models

	Child Well-Being Outcomes		
	Cognitive Achievement		Externalizing Behavior
	Applied Problem	Letter-Word	
Bivariate correlation with family income	.311**	.315**	-.143*
Income + child controls <sup>a</sup>			
Unstandardized $\beta$ (SE) <sup>b</sup>	.877** (.223)	1.144** (.181)	-.267* (.075)
R <sup>2</sup> for outcome	.192	.120	.042
1-RMSEA for model <sup>c</sup>	.99	.99	.99
$\chi^2$ (df) for model	.30(1)	.30(1)	.30(1)
Income + all controls <sup>a</sup> (baseline model)			
Unstandardized $\beta$ (SE) <sup>b</sup>	.521* (.265)	.666* (.210)	-.186* (.084)
R <sup>2</sup> for outcome	.247	.209	.048
1-RMSEA for model <sup>c</sup>	.99	.99	.99
$\chi^2$ (df) for model	2.47(6)	2.65(6)	4.81(6)
Baseline + investment mediators			
Unstandardized $\beta$ (SE) <sup>b</sup>	.210 (.274)	.545* (.218)	-.130 (.087)
R <sup>2</sup> for outcome	.278	.233	.081
1-RMSEA for model <sup>c</sup>	.96	.96	.96
$\chi^2$ (df) for model	15.58(9)	15.31(9)	17.82*(9)
Baseline + family stress mediators			
Unstandardized $\beta$ (SE) <sup>b</sup>	.582* (.270)	.632* (.215)	-.118 (.083)
R <sup>2</sup> for outcome	.262	.217	.158
1-RMSEA for model <sup>c</sup>	.97	.97	.96
$\chi^2$ (df) for model	10.48(7)	10.85(7)	13.18(7)
Baseline + investment + family stress mediators			
Unstandardized $\beta$ (SE) <sup>b</sup>	.340 (.278)	.543* (.222)	-.120 (.087)
R <sup>2</sup> for outcome	.291	.237	.157
1-RMSEA for model <sup>c</sup>	.92	.92	.93
$\chi^2$ (df) for model	65.95**(15)	66.09**(15)	66.85**(15)
Number of observations	563	569	707

Note: RMSEA = root mean square error of approximation.

<sup>a</sup>Control variables included child's age, gender, race, and low birthweight status; mother's age, education, and cognitive ability; family size, family structure, metropolitan area, and region of country.

<sup>b</sup>Unstandardized  $\beta$ s are reported for the direct path between income and child outcome.

<sup>c</sup>Other fit indices (i.e., normal fit index, incremental fit index, comparative fit index) for all models were greater than .95.

\*  $p < .05$ ; \*\*  $p < .01$ .

the bivariate correlation of average family income and each child well-being outcome was significant.

The unstandardized parameter estimates of the association between family income and child outcome in each model reveal a pattern of how different mediators may be operating. For the W-J applied problem score, we found that the direct effect of income on a child's achievement was reduced by more than half and became nonsignificant when the investment mediators were added to the baseline model. The same reduction did not occur when the family stress mediators were added to the baseline model; in fact, the

unstandardized parameter estimate remained statistically significant and increased slightly when the family stress mediators were added to the model.

For the W-J letter-word score, the net income effect remained significant and decreased by a much smaller magnitude, amounting to about one fifth when both sets of mediators were added to the model, with the reduction mainly due to the addition of the investment mediators. When investment mediators were added to the baseline model, the amount of explained variance increased by about 3% for both the applied problem score and the letter-word score. The increase

was smaller, about 1%, when the family stress mediators were added to the baseline model.

For child externalizing problem behaviors, a different pattern emerged: the income coefficient was reduced and became nonsignificant when either set of mediators was added to the baseline model. Thus, constructs from both models seemed to mediate the relation between income and externalizing problem behaviors. When mediators from both family stress and investment framework were added to the model, the explained variance in child outcomes was higher than when only one set of mediators was included in the model for both cognitive outcomes. In contrast to results for the achievement models, mediators in the family stress model explained much more of the variance in externalizing behavior problems than did those in the investment model. An increase in explained variance of 11% was observed when mediators in the family stress model were added, as opposed to a 3% increase when investment mediators were added to the baseline model. The explained variance in the full model was slightly lower than when only the family stress mediators were in the model, indicating that the investment mediators did not contribute to explaining the variance in child's external behavior problems.

#### Overall Model Fit

Statistical evaluations of overall model fit yielded somewhat inconsistent results. Because  $\chi^2$  values are sensitive to the sample size and are often found to be significant with large sample sizes, other goodness-of-fit indicators are often used to determine the overall fit of models. Although various goodness-of-fit indices are computed slightly differently, they all take into account the  $\chi^2$  and degrees of freedom of the proposed model, and compare these to an "independence" model in which all model constructs are assumed to be unrelated (Bollen, 1989). These goodness-of-fit indices augment the  $\chi^2$  values, providing additional indicators of how well the data fit the proposed model (Bentler, 1990; Marsh, Balla, & Hau, 1996). All fit indices reported can range in value from 0 to 1, where .90 or above is considered a good fit (Schumacker & Lomax, 1996). For all models we estimated, a variety of goodness-of-fit indices (normed fit index, incremental fit index, and 1-root mean square error of approximation) were all above .90, indicating that all models fit the data well. The  $\chi^2$  values for all models (except the full models across all outcomes and the external behavior problem model with only the investment mediators) were nonsignificant, indicating that we could accept the null hypothesis that

the proposed model did not differ from a model that fit the data perfectly (Schumacker & Lomax, 1996).

Because our focus was on the mediating pathways of various factors and the interplay between the investment and family stress mediators, we now turn our attention to the parameter estimates in the full model for each child outcome.

*Parameter estimates of the full model.* Figures 2 through 4 present unstandardized and standardized (in bold-face type) parameter estimates of the full model for each outcome. To enhance the readability of the figures, only statistically significant estimates of the paths are presented. Nonsignificant parameter estimates, as well as those between control variables and outcomes, are available from the authors on request.

For the full model predicting child's applied problems score (Figure 2), the income effect on child's applied problem score was primarily mediated by the physical home environment. Higher family income was related to a better physical home environment, which then had a direct positive effect on child's applied problem score. Higher income was also associated with other investment mediators, more cognitively stimulating materials at home, and a higher child-care expenditure. As postulated by the family stress model, low income was associated with increased economic pressure, which in turn was associated with increased maternal emotional distress and punitive parenting practices. However, neither maternal distress nor parenting practices had a direct effect on the applied problem score as the family stress model would predict. The investment mediators also had a positive effect on maternal psychological well-being and parenting behavior. In fact, the physical home environment and stimulating materials had a larger effect on maternal psychological well-being than did mother's perception of economic pressure.

For the child's W-J letter-word score, cognitively stimulating materials and activities were both directly related to letter-word score and had a similar magnitude of impact (Figure 3). The physical environment of the home was associated with letter-word score through its negative association with punitive parenting practices. Support for the family stress model was found: economic pressure was associated with higher maternal emotional distress, which in turn was associated with more punitive parenting practices, which was associated with a significantly lower letter-word score. The direct effect of punitive parenting on test scores, however, was weaker than that of stimulation provided by the parents. Income remained a significant predictor of child's letter-word score after all the controls and mediators were entered

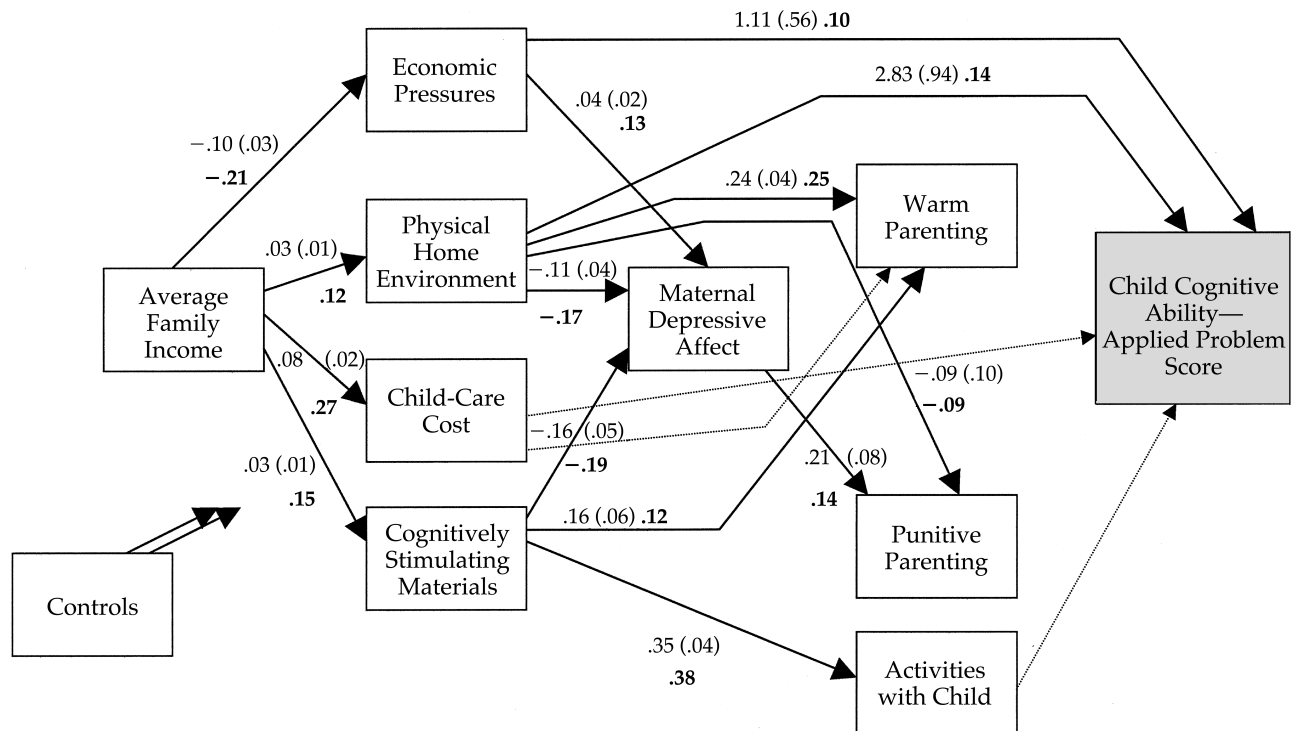


Figure 2 Unstandardized and standardized (bold faced) parameter estimates (SE) in the full model for applied problem score outcome. Paths with solid lines are significant at the  $p < .05$  level; those with dotted lines are significant at the .10 level.

into the model. Indeed, standardized estimates showed that the direct effect of family income was stronger than the effect of cognitively stimulating materials and activities for child's W-J letter-word score.

For externalizing behavior problems, the family stress model was applicable (Figure 4). Higher emotional distress was associated with behavior problems, both directly and indirectly through punitive parenting practices. Higher investments in the form of the physical home environment, child-care environment, and cognitively stimulating materials were indirectly related to fewer externalizing behavior problems through their impact on maternal emotional distress and parenting practices. Distinct from the models for achievement test scores was the direct association between the family stress mediators and child's behavior problems. Standardized estimates showed that maternal depressive affect, of all variables in the model, had the strongest association with child's externalizing behavior problems.

It is useful to put the income effects in the context of other demographic control variables. To compare the relative magnitude of the association each variable had with child outcomes, the standardized direct and total effects of all variables in the model on each outcome

variable are presented in Table 3. Of the sociodemographic control variables, being Black, mother's cognitive ability and child's birthweight were significantly associated with child's W-J applied problem score. Mother's cognitive ability and being African American, in particular, had the largest total effect on a child's applied problem score—larger than that from family income or other mediators. These results suggest that factors prior to a child's birth may contribute significantly to a child's life chances. Measures that prevent low-weight births are important. Future studies should explore why the impact of race and maternal cognitive ability, net of other socioeconomic characteristics of the family, are so strong with regard to a child's development. Of all the mediators, the physical environment of the home had the largest total effect. Mediators in the parental investment model had a larger total effect than did those in the family stress model.

For W-J letter-word score, mother's cognitive ability was again the strongest predictor, having a larger effect than family income and all other mediators. Of the mediators, cognitively stimulating materials and activities had the largest total effect. Other significant predictors of child's letter-word score included child's and mother's age and family size. Maternal education,

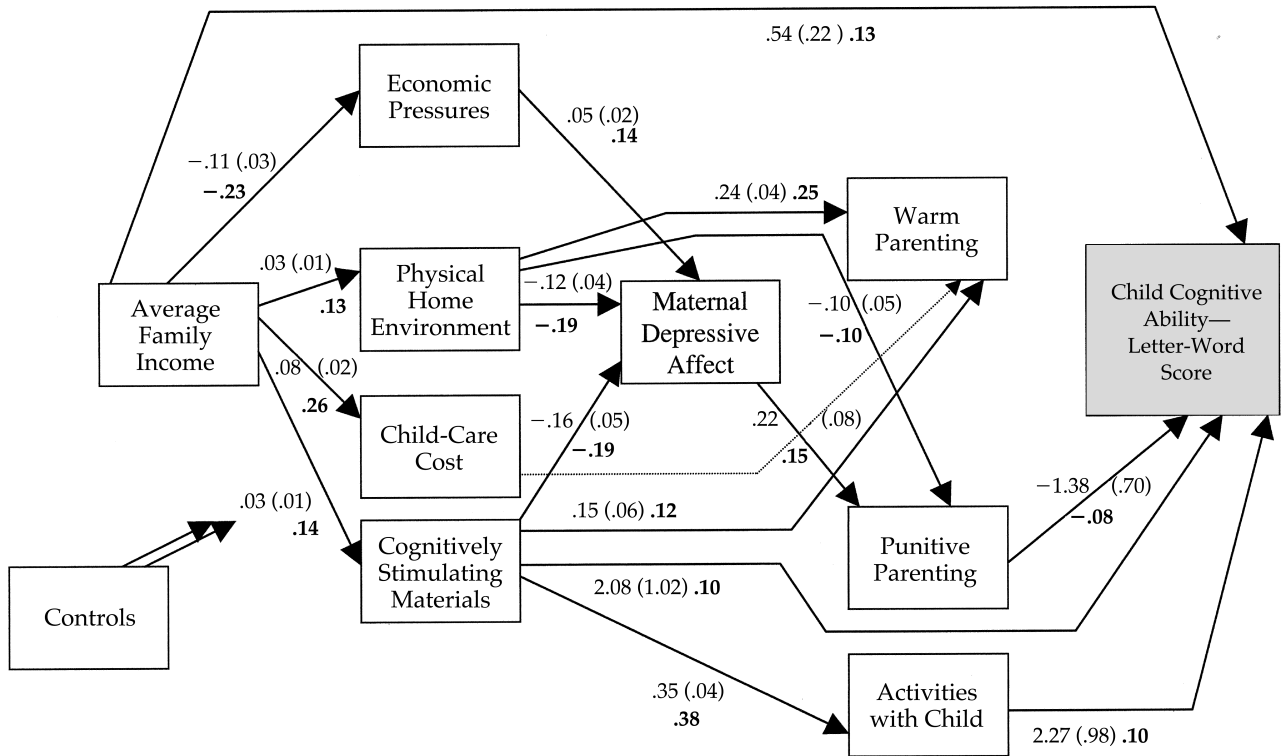


Figure 3 Unstandardized and standardized (bold faced) parameter estimates (SE) in the full model for letter-word score outcome. Paths with solid lines are significant at the  $p < .05$  level; those with dotted lines are significant at the .10 level.

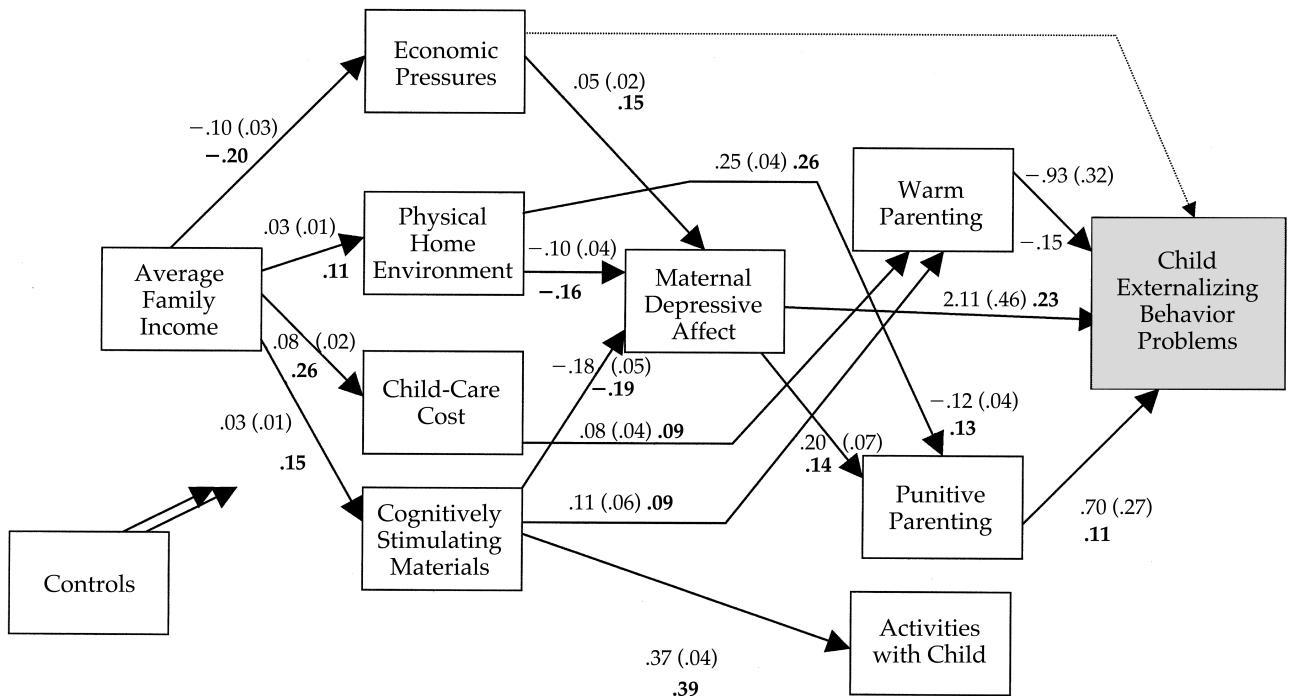


Figure 4 Unstandardized and standardized (bold faced) parameter estimates (SE) in the full model for externalizing behavior problems outcome. Paths with solid lines are significant at  $p < .05$  level; those with dotted lines are significant at .10 level.

Table 3 Standardized Direct and Total Effects of All Variables on Child Outcomes

	Applied Problem Score		Letter-Word Score		External Behavior Problems	
	Direct	Total	Direct	Total	Direct	Total
Income constructs						
Average family income	.064	.099	.132*	.162	-.072	-.110
Income instability	-.033	-.058	-.044	-.045	-.020	.007
Investment model						
Physical environment	.140*	.158	.061	.068	.041	-.134
Cognitive stimulation	.044	.085	.100*	.138	-.012	-.074
Mean monthly child-care cost	.096 <sup>+</sup>	.098	.017	-.008	.014	-.005
Activities with child	.081 <sup>+</sup>	.081	.101*	.101	-.067	-.067
Family stress model						
Economic strain	.103*	.096	.022	.013	.100 <sup>+</sup>	.143
Mother depressive affect	-.035	-.031	.017	.002	.228*	.249
Warm parenting	.056	.056	-.024	-.024	-.147*	-.147
Spanking index	.054	.054	-.083*	-.083	.107*	.107
Sociodemographic controls						
Child characteristics						
Age	.062	.046	-.121*	-.101	-.044	-.054
Gender (1 = girl)	.006	.009	.070	.079	-.043	-.041
Whether low birthweight	-.073*	-.071	-.052	-.044	.036	.021
Mother characteristics						
Age	.060	.085	.131*	.136	.053	.022
Education	-.017	.007	-.048	-.019	-.004	-.067
Cognitive ability	.149*	.235	.210*	.238	.053	.007
Other family characteristics						
Race (White omitted)						
Black	-.208*	-.201	.063	.021	-.098 <sup>+</sup>	-.069
Other	-.030	-.036	.028	.003	-.054	-.064
Family size	-.033	-.105	-.122*	-.147	-.035	.013
Family structure (two biological parents omitted)						
Mother/stepfather	.021	.039	-.016	-.013	.047	.073
Single mother	.004	-.041	-.055	-.071	-.038	.089
Other	-.021	-.036	-.010	-.033	.024	.080
Whether metropolitan	-.004	.006	.101*	.100	.015	.004
Region (South omitted)						
Northeast	-.012	-.001	.012	.039	.070	.052
Midwest	-.016	-.007	-.116*	-.098	.037	.010
West	-.011	-.009	-.018	-.005	.055	.037

\* $p < .05$ ; <sup>+</sup> $p < .10$ .

often found to be a significant predictor of child's cognitive outcomes, was not significant when mother's cognitive ability was added to the model. Results for child's behavior problems indicated that none of the demographic control variables had a statistically significant effect. Maternal depressive affect had the largest total effect on child's behavior problems, followed by the warm parenting measure, economic strain, the physical environment at home, and the punitive parenting measure.

In terms of the effect of the control variables on the mediators (results available from authors on request), we found that mothers with higher education and

cognitive ability and parents in two-parent households tended to provide a better physical environment as well as more stimulating experiences to their children. Results also showed that, consistent with findings from other recent studies, White mothers and single mothers tended to be more depressed than non-White mothers and mothers in other family types (Klebanov, Brooks-Gunn, & McCormick, 2001).

## DISCUSSION

This study examined how income effects on young children's development are mediated by parental

investment and family processes in this nationally representative sample from the PSID. Investment mediators were expected to be more important for achievement scores and family process mediators were expected to have a more significant impact on behavior problems outcomes. As expected, children who lived in families with higher income scored higher on cognitive tests and had fewer behavior problems. However, the size of the income effect was modest, particularly for behavior problems, and decreased as we added various groups of variables to the models. After controlling for a wide range of relevant sociodemographic characteristics and mediating variables, the net effect of family income became nonsignificant for two of the three child outcomes. Only for the W-J letter-word score outcome did income remain a significant predictor. Every \$10,000 increase in family income was associated with about half a point increase in the letter-word score.

On the other hand, the other measure of family economic circumstances—income instability—had a significant direct effect on a child's W-J applied problem score, a nonsignificant effect on child's letter-word score, and only a marginally significant effect on externalizing behavior problems. Despite the lack of a direct association with child's letter-word score and behavior problems, income instability was consistently associated with maternal depressive affect, which tended to be associated with more punitive parenting behaviors, which in turn were associated with lower letter-word scores and more externalizing behavior problems. These results revealed that the level and stability of family income have distinct effects on family functioning and children's well-being. Hence, it is imperative that both measures be included in studies of income effects. Little research has done so to date.

Our test of the multiple mediating mechanisms of income for different child outcomes led us to the following conclusions. First, different mediating mechanisms are at work for different child outcomes. Much of the income effect on child's cognitive test scores was mediated by a family's investment in providing an environment that is beneficial to the child's learning, and not by maternal emotional distress or parenting behavior. Cognitively stimulating materials and activities were the most important mediators of the relation between income and child's letter-word scores, and the physical environment of the home was the most important mediator in the relation between income and child's applied problem scores. In contrast, results for child's behavior problems demonstrated that maternal emotional distress was the main mediator of income effects on child's behavior. Although

investment mediators did not have direct effects on child's behavior problems, a stimulating home environment was indirectly related to lower behavior problems through its association with lower maternal distress and better parenting practices. An important contribution of this study was our attempt to separate the effect of cognitively stimulating materials and experiences, which money can buy, from parents' time investment in stimulating activities with a child, which presumably are less dependent on money. This distinction has not been made in previous research. Both measures had a significant direct effect (with the same magnitude of effects as indicated by the standardized coefficients) on child's letter-word score, though not on child's behavior problems. The results also demonstrated that more stimulating materials were associated with a higher level of parental activities with a child.

Second, income effects were indeed mediated by both investment and maternal psychological well-being. The explanatory power of the combined model was greater than that of either model examined separately. Furthermore, factors posited in the investment and family stress models interacted with each other. For example, we found that family income was associated with maternal emotional distress and parenting practices not only through the perception of economic pressure as postulated in the family stress model, but also through family resources. The physical environment of the home and a cognitively stimulating environment were not only conducive to child's learning, but also to mother's psychological well-being and positive parenting behavior, which in turn were significantly associated with child's behavior problems. This mediating pathway has not been directly tested in previous research. These findings provide support for the integration of the investment and family stress perspectives in future research, because results from our analysis clearly showed that the relationships among the constructs are often difficult to disentangle.

Although we attempted to measure more aspects of each perspective, gaps remained in our full models. For example, investment perspective constructs such as quality of neighborhood environment, health care, and child-care quality measures are important domains missing in the model. For the family stress perspective, our models, as in almost all previous literature, focused on mother's behavior and characteristics and left the role of fathers largely untapped except in the measure of the family structure that took into account father's presence (R. D. Conger and colleagues' work is a notable exception; e.g., R. D. Conger et al., 1992). Future research could include father's perception of financial

stain, mental well-being, parenting behavior, and level of involvement with children.

These results should be interpreted in light of limitations of this study. As noted, although the PSID has excellent data on family income history, the data on family processes, home environment, and the child outcomes were all measured at one point in time. The lack of longitudinal data makes it difficult to establish the causal direction of influence between child outcomes, family processes, and parental investment. For example, a child's behavior problems could influence mother's emotional well-being and her parenting behavior rather than the other way around, or the mother's psychological well-being could influence the cleanliness and safety of the home environment, and so on. In addition, there may be reporting bias in measures of child's behavior problems and mother's emotional well-being, as these data were all collected from the mother.

Our analyses revealed that there is no single pathway through which family income operates on child outcomes. Programs that aim to provide children with cognitively stimulating materials, increase family literacy, or encourage parental engagement in reading and stimulating outings may be more effective than interventions that focus solely on parenting skills, if the goal is to improve young children's cognitive achievement (Brooks-Gunn, Berlin, & Fuligni, 2000; Fuligni & Brooks-Gunn, 2000). These stimulating activities alone, however, may not be very effective in reducing children's behavior problems. Strategies to improve parents' psychological well-being and parenting behavior might be the focus, if reducing behavior problems in children is the goal (Brooks-Gunn et al., 2000). To promote healthy development of children in multiple domains of functioning, a multipronged approach is needed. It might be most effective to offer a package of services to families that includes not only cash benefit or earnings supplements, but also services that are aimed at promoting family literacy, reducing parental stress, improving parenting behavior, and providing affordable quality child-care.

One example of a multipronged program is the recent New Hope experiment in Milwaukee, which offered low-income working families job search assistance and an earnings supplement that was designed to lift them out of poverty, as well as affordable health insurance and child-care assistance on an as-needed basis. The study found that for families that were already working full time before receiving the New Hope benefits, there was a modest reduction in parents' overtime and second jobs, which presumably increased time spent in parent-child interactions (but did not lead to lower family income). Compared with a control group, parents in the New Hope experimen-

tal group had less stress, fewer worries, and better parent-child relations, possibly because these families were better able to balance work and family life through access to higher quality health care, child care, and a higher family income (Morris, 2002). The study also found positive effects for school-age boys on classroom behavior, school performance, and social competence. These effects may be related to families' increased access through New Hope to greater use of after-school care, improved parent-child interaction, or both. These findings suggest that programs that increase family income as well as those that provide in-kind services could be effective in improving the well-being of low-income families and children. Indeed, a combination of both program types may be necessary to reduce financial strain and improve the quality of family processes.

Other interventions that have been shown to be effective in reducing parental stress include home visiting programs that offer parenting and emotional support, provided that the intervention is intensive (Brooks-Gunn et al., 2000); and high-quality center-based care that is targeted directly at children (Currie, 2001; Karoly et al., 1998). Klebanov et al. (2001) reported that home visiting in the first 3 years of a child's life and center-based care in the second and third years reduced maternal emotional distress, particularly so for women with less than a high school education and those with less active coping strategies. Fuligni and Brooks-Gunn's review (2000) illustrated that economically disadvantaged children benefit from high-quality, center-based child-care programs augmented by services that support other family members and the family as a whole.

Although the results of the present study speak to how income may matter for families, it is important to place current studies and evaluations of welfare policies in context. Although increased income may result in enhanced learning, cognitive stimulation, and parenting behavior, it is unclear whether many low-income families will be able to alter their financial status under current economic conditions. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 has altered the nature of the American safety net quite dramatically. Aid to Families with Dependent Children, which guaranteed aid for low-income families with children, was eliminated and replaced with Temporary Assistance to Needy Families (TANF), which places a time limit on how long parents may receive the transfer and requires parents to work in order to receive benefits. Despite the drastic decrease in welfare rolls since the late 1990s, recent studies have shown that family income has not risen for welfare leavers and working mothers in the lowest end of the income distribution



(Meyer & Cancian, 1998). Working more hours has not led to improved financial security for this group because most of them held low-wage jobs, were underemployed or became unemployed, and often passed through the revolving door between labor market and welfare. Furthermore, some mothers experienced more depressive symptoms because of the lack of quality child care and added financial strain from work-related costs. A recent study also found that TANF was associated with lower poverty rate for parents who had a high school diploma or higher, whereas those with less education were significantly poorer after TANF (Bennet, Lu, & Song, 2001). Given the current slowdown of the economy, we see no reason to expect these trends to be altered in the first decade of this century. Indeed, many scholars have raised grave concerns over an expected increase in economic insecurity for low-income families. Government aid targeted to this most vulnerable group may become particularly critical now, because many of these families are facing the double burden of running against the time limits and securing employment in an economic down time. Research suggests that recent welfare policies that only increase employment, but do not boost income, have limited effects on children (Morris, 2002). Earnings supplement programs and in-kind services such as formal child care and after-school programs that have been found to benefit children in low-income families (Currie, 1997) are vital in safeguarding children's well-being.

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