

# The Effects of Poverty on Children

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## Abstract

Although hundreds of studies have documented the association between family poverty and children's health, achievement, and behavior, few measure the effects of the timing, depth, and duration of poverty on children, and many fail to adjust for other family characteristics (for example, female headship, mother's age, and schooling) that may account for much of the observed correlation between poverty and child outcomes. This article focuses on a recent set of studies that explore the relationship between poverty and child outcomes in depth. By and large, this research supports the conclusion that family income has selective but, in some instances, quite substantial effects on child and adolescent well-being. Family income appears to be more strongly related to children's ability and achievement than to their emotional outcomes. Children who live in extreme poverty or who live below the poverty line for multiple years appear, all other things being equal, to suffer the worst outcomes. The timing of poverty also seems to be important for certain child outcomes. Children who experience poverty during their preschool and early school years have lower rates of school completion than children and adolescents who experience poverty only in later years. Although more research is needed on the significance of the timing of poverty on child outcomes, findings to date suggest that interventions during early childhood may be most important in reducing poverty's impact on children.

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In recent years, about one in five American children—some 12 to 14 million—have lived in families in which cash income failed to exceed official poverty thresholds. Another one-fifth lived in families whose incomes were no more than twice the poverty threshold.<sup>1,2</sup> For a small minority of children—4.8% of all children and 15% of children who ever became poor—childhood poverty lasted 10 years or more.<sup>3</sup>

Income poverty is the condition of not having enough income to meet basic needs for food, clothing, and shelter. Because children are dependent on others, they enter or avoid poverty by virtue of their family's economic circumstances. Children cannot alter family conditions by themselves, at least until they approach adulthood. Government programs, such as those described by Devaney, Ellwood, and Love in this journal issue, have been developed to increase the likelihood that poor children are provided with

basic necessities. But even with these programs, poor children do not fare as well as those whose families are not poor.<sup>4</sup>

What does poverty mean for children? How does the relative lack of income influence children's day-to-day lives? Is it through inadequate nutrition; fewer learning experiences; instability of residence; lower quality of schools; exposure to environmental toxins, family violence, and homelessness; dangerous streets; or less access to friends, services, and, for adolescents, jobs? This article reviews recent research that used longitudinal data to examine the relationship between income poverty and child outcomes in several domains.

Hundreds of studies, books, and reports have examined the detrimental effects of poverty on the well-being of children. Many have been summarized in recent reports such as *Wasting America's Future* from the Children's Defense Fund and *Alive and Well?* from the National Center for Children in Poverty.<sup>5</sup> However, while the literature on the effects of poverty on children is large, many studies lack the precision necessary to allow researchers to disentangle the effects on children of the array of factors associated with poverty. Understanding of these relationships is key to designing effective policies to ameliorate these problems for children.

This article examines these relationships and the consequences for children of growing up poor. It begins with a long, but by no means exhaustive, list of child outcomes (see Table 1) that have been found to be associated with poverty in several large, nationally representative, cross-sectional surveys. This list makes clear the broad range of effects poverty can have on children. It does little, however, to inform the discussion of the causal effects of income poverty on children because the studies from which this list is derived did not control for other variables associated with poverty. For example, poor families are more likely to be headed by a parent who is single, has low educational attainment, is unemployed, has low earning potential, and is young. These parental attributes, separately or in combination, might account for some of the observed negative consequences of poverty on children. Nor do the relationships identified in the table capture the critical factors of the timing, depth, and duration of childhood poverty on children.<sup>6,7</sup>

This article focuses on studies that used national longitudinal data sets to estimate the effects of family income on children's lives, independent of other family conditions that might be related to growing up in a low-income household. These studies attempt to isolate the effect of family income by taking into account, statistically, the effects of maternal age at the child's birth, maternal education, marital status, ethnicity, and other factors on child outcomes.<sup>2,8</sup> Many used data on family income over several years and at different stages of development to estimate the differential effects of the timing and duration of poverty on child outcomes. The data sets analyzed include the Panel Study of Income Dynamics (PSID), the National Longitudinal Survey of Youth (NLSY), Children of the NLSY (the follow-up of the children born to the women in the original NLSY cohort), the National Survey of Families and Households (NSFH), the National Health and Nutrition Examination Survey (NHANES), and the Infant Health and

Development Program (IHDP). These rich data sets include multiple measures of child outcomes and family and child characteristics.

This article is divided into four sections. The first focuses on the consequences of poverty across five child outcomes. If income does, in fact, affect child outcomes, then it is important not only to identify these outcomes but also to describe the pathways through which income operates. Accordingly, in the second section, five pathways through which poverty might operate are described. The third section focuses on whether the links between poverty and outcomes can reasonably be attributed to income rather than other family characteristics. The concluding section considers policy implications of the research reviewed.

## Effects of Income on Child Outcomes

### Measures of Child Well-Being

As illustrated in Table 1, poor children suffer higher incidences of adverse health, developmental, and other outcomes than non-poor children. The specific dimensions of the well-being of children and youths considered in some detail in this article include (1) physical health (low birth weight, growth stunting, and lead poisoning), (2) cognitive ability (intelligence, verbal ability, and achievement test scores), (3) school achievement (years of schooling, high school completion), (4) emotional and behavioral outcomes, and (5) teenage out-of-wedlock childbearing. Other outcomes are not addressed owing to a scarcity of available research, a lack of space, and because they overlap with included outcomes.

While this review is organized around specific outcomes, it could also have been organized around the various ages of childhood.<sup>9-11</sup> Five age groups are often distinguished—prenatal to 2 years, early childhood (ages 3 to 6), late childhood (ages 7 to 10), early adolescence (ages 11 to 15), and late adolescence (ages 16 to 19). Each age group covers one or two major transitions in a child's life, such as school entrances or exits, biological maturation, possible cognitive changes, role changes, or some combination of these. These periods are characterized by relatively universal developmental challenges that require new modes of adaptation to biological, psychological, or social changes.<sup>10</sup>

Somewhat different indicators of child and youth well-being are associated with

each period. For example, grade retention is more salient in the late childhood years than in adolescence (since most schools do not hold students back once they reach eighth grade<sup>12</sup>). Furthermore, low income might influence each indicator differently. As an illustration, income has stronger effects on cognitive and verbal ability test scores than it has on indices of emotional health in the childhood years.

### Physical Health

Compared with nonpoor children, poor children in the United States experience diminished physical health as measured by a number of indicators of health status and outcomes (see Table 1). In the 1988 National Health Interview Survey, parents reported that poor children were only two-thirds as likely to be in excellent health and almost twice as likely to be in fair or poor health as nonpoor children. These large differences in health status between poor and nonpoor children do not reflect adjustment for potentially confounding factors (factors, other than income, that may be associated with living in poverty) nor do they distinguish between long- or short-term poverty or the timing of poverty. This section reviews research on the relationship of poverty to several key measures of child health, low birth weight and infant mortality, growth stunting, and lead poisoning. For the most part, the focus is on research that attempts to adjust for important confounding factors and/or to address the effect of the duration of poverty on child health outcomes.

### Birth Outcomes

Low birth weight (2,500 grams or less) and infant mortality are important indicators of child health. Low birth weight is associated with an increased likelihood of subsequent

Table 1

<b>Selected Population-Based Indicators of Well-Being for Poor and Nonpoor Children in the United States</b>			
<b>Indicator</b>	<b>Percentage of Poor Children (unless noted)</b>	<b>Percentage of Nonpoor Children (unless noted)</b>	<b>Ratio of Poor to Nonpoor Children</b>
<b>Physical Health Outcomes</b> (for children between 0 and 17 years unless noted)			
Reported to be in excellent health <sup>a</sup>	37.4	55.2	0.7
Reported to be in fair to poor health <sup>a</sup>	11.7	6.5	1.8
Experienced an accident, poisoning, or injury in the past year that required medical attention <sup>a</sup>	11.8	14.7	0.8
Chronic asthma <sup>a</sup>	4.4	4.3	1.0
Low birth weight (less than 2,500 grams) <sup>b</sup>	1.0	0.6	1.7
Lead poisoning (blood lead levels 10µ/dL or greater) <sup>c</sup>	16.3	4.7	3.5
Infant mortality <sup>b</sup>	1.4 deaths per 100 live births	0.8 death per 100 live births	1.7
Deaths During Childhood (0 to 14 years) <sup>d</sup>	1.2	0.8	1.5
Stunting (being in the fifth percentile for height for age for 2 to 17 years) <sup>e</sup>	10.0	5.0	2.0
Number of days spent in bed in past year <sup>a</sup>	5.3 days	3.8 days	1.4
Number of short-stay hospital episodes in past year per 1,000 children <sup>a</sup>	81.3 stays	41.2 stays	2.0
<b>Cognitive Outcomes</b>			
Developmental delay (includes both limited and long-term developmental deficits) (0 to 17 years) <sup>a</sup>	5.0	3.8	1.3
Learning disability (defined as having exceptional difficulty in learning to read, write, and do arithmetic) (3 to 17 years) <sup>a</sup>	8.3	6.1	1.4
<b>School Achievement Outcomes</b> (5 to 17 years)			
Grade repetition (reported to have ever repeated a grade) <sup>a</sup>	28.8	14.1	2.0
Ever expelled or suspended <sup>a</sup>	11.9	6.1	2.0
High school dropout (percentage 16- to 24-year-olds who were not in school or did not finish high school in 1994) <sup>f</sup>	21.0	9.6	2.2
<b>Emotional or Behavioral Outcomes</b> (3 to 17 years unless noted)			
Parent reports child has ever had an emotional or behavioral problem that lasted three months or more <sup>g</sup>	16.4	12.7	1.3
Parent reports child ever being treated for an emotional problem or behavioral problem <sup>a</sup>	2.5	4.5	0.6
Parent reports child has experienced one or more of a list of typical child behavioral problems in the last three months <sup>h</sup> (5 to 17 years)	57.4	57.3	1.0
<b>Other</b>			
Female teens who had an out-of-wedlock birth <sup>i</sup>	11.0	3.6	3.1
Economically inactive at age 24 (not employed or in school) <sup>j</sup>	15.9	8.3	1.9
Experienced hunger (food insufficiency) at least once in past year <sup>k</sup>	15.9	1.6	9.9

Table 1 (continued)

Selected Population-Based Indicators of Well-Being for Poor and Nonpoor Children in the United States			
Indicator	Percentage of Poor Children (unless noted)	Percentage of Nonpoor Children (unless noted)	Ratio of Poor to Nonpoor Children
Reported cases of child abuse and neglect <sup>f</sup>	5.4	0.8	6.8
Violent crimes (experienced by poor families and nonpoor families) <sup>m</sup>	5.4	2.6	2.1
Afraid to go out (percentage of family heads in poor and nonpoor families who report they are afraid to go out in their neighborhood) <sup>n</sup>	19.5	8.7	2.2
<p>Note: This list of child outcomes reflects findings from large, nationally representative surveys that collect data on child outcomes and family income. While most data come from the 1988 National Health Interview Survey Child Health Supplement, data from other nationally representative surveys are included. The rates presented are from simple cross-tabulations. In most cases, the data do not reflect factors that might be important to child outcomes other than poverty status at the time of data collection. The ratios reflect rounding.</p>			
<p><sup>a</sup> Data from the 1988 National Health Interview Survey Child Health Supplement (NHIS-CHS), a nationwide household interview survey. Children's health status was reported by the adult household member who knew the most about the sample child's health, usually the child's mother. Figures calculated from Dawson, D.A. <i>Family structure and children's health: United States, 1988</i>. Vital Health and Statistics, Series 10, no. 178. Hyattsville, MD: U.S. Department of Health and Human Services, Public Health Service, June 1991; and Coiro, M.J., Zill, N., and Bloom, B. <i>Health of our nation's children</i>. Vital Health and Statistics, Series 10, no. 191. Hyattsville, MD: U.S. Department of Health and Human Services, Public Health Service, December 1994.</p> <p><sup>b</sup> Data from the National Maternal and Infant Health Survey, data collected in 1989 and 1990, with 1988 as the reference period. Percentages were calculated from the number of deaths and number of low birth weight births per 1,000 live births as reported in Federman, M., Garner, T., Short, K., et al. What does it mean to be poor in America? <i>Monthly Labor Review</i> (May 1996) 119:5:10.</p> <p><sup>c</sup> Data from the NHANES III, 1988–1991. Poor children who lived in families with incomes less than 130% of the poverty threshold are classified as poor. All other children are classified as nonpoor.</p> <p><sup>d</sup> Percentages include only black and white youths. Percentages calculated from Table 7 in Rogot, E. <i>A mortality study of 1.3 million persons by demographic, social and economic factors: 1979–1985 follow-up</i>. Rockville, MD: National Institutes of Health, July 1992.</p> <p><sup>e</sup> Data from NHANES II, 1976–1980. For more discussion, see the Child Indicators article in this journal issue.</p> <p><sup>f</sup> National Center for Education Statistics. <i>Dropout rates in the United States: 1994</i>. Table 7, Status dropout rate, ages 16–24, by income and race ethnicity: October 1994. Available online at: <a href="http://www.ed.gov/NCES/pubs/r9410f07.html">http://www.ed.gov/NCES/pubs/r9410f07.html</a>.</p> <p><sup>g</sup> Data from the NHIS-CHS. The question was meant to identify children with common psychological disorders such as attention deficit disorder or depression, as well as more severe problems such as autism.</p> <p><sup>h</sup> Data from the NHIS-CHS. Parents responded "sometimes true," "often true," or "not true" to a list of 32 statements typical of children's behaviors. Each statement corresponded to one of six individual behavior problems—antisocial behavior, anxiety, peer conflict/social withdrawal, dependency, hyperactivity, and headstrong behavior. Statements included behaviors such as cheating or lying, being disobedient in the home, being secretive, and demanding a lot of attention. For a more complete description, see Section P-11 of the NHIS-CHS questionnaire.</p> <p><sup>i</sup> Data from the Panel Study of Income Dynamics (PSID). Based on 1,705 children ages 0 to 6 in 1968; outcomes measured at ages 21 to 27. Haveman, R., and Wolfe, B. <i>Succeeding generations: On the effect of investments in children</i>. New York: Russell Sage Foundation, 1994, p. 108, Table 4.10c.</p> <p><sup>j</sup> Data from the PSID. Based on 1,705 children ages 0 to 6 in 1968; outcomes measured at ages 21 to 27. In <i>Succeeding generations: On the effect of investments in children</i>. Haveman, R., and Wolfe, B. New York: Russell Sage Foundation, 1994, p. 108, Table 4.10d. Economically inactive is defined as not being a full-time student, working 1,000 hours or more per year; attending school part time and working 500 hours; a mother of an infant or mother of two or more children less than five years old; a part-time student and the mother of a child less than five years old.</p> <p><sup>k</sup> Data from NHANES III, 1988–1991. Figures reflect food insufficiency, the term used in government hunger-related survey questions. For a more in-depth discussion, see Lewit, E.M., and Kerrebrock, N. Child indicators: Childhood hunger. <i>The Future of Children</i> (Spring 1997) 7,1:128–37.</p> <p><sup>l</sup> Data from Study of National Incidence and Prevalence of Child Abuse and Neglect: 1988. In <i>Wasting America's future</i>. Children's Defense Fund. Boston: Beacon Press, 1994, pp. 5–29, 87, Tables 5–6. Poor families are those with annual incomes below \$15,000.</p> <p><sup>m</sup> Data from the National Crime Victimization Interview Survey. Results are for households or persons living in households. Data were collected between January 1992 and June 1993 with 1992 as the reference period. Percentages are calculated from number of violent crimes per 1,000 people per year. Reported in Federman, M., Garner, T., Short, K., et al. What does it mean to be poor in America? <i>Monthly Labor Review</i> (May 1996) 119:5:9.</p> <p><sup>n</sup> Data from the Survey of Income and Program Participation. Participation data collection and reference periods are September through December 1992. Reported in Federman, M., Garner, T., Short, K., et al. What does it mean to be poor in America? <i>Monthly Labor Review</i> (May 1996) 119:5:9.</p>			

physical health and cognitive and emotional problems that can persist through childhood and adolescence. Serious physical disabilities, grade repetition, and learning disabilities are more prevalent among children who were low birth weight as infants, as are lower levels of intelligence and of math and reading achievement. Low birth weight is also the key risk factor for infant mortality (especially death within the first 28 days of life), which is a widely accepted indicator of the health and well-being of children.<sup>13</sup>

Estimating the effects of poverty alone on birth outcomes is complicated by the fact that adverse birth outcomes are more prevalent for unmarried women, those with low levels of education, and black mothers—all groups with high poverty rates. One study that used data from the NLSY to examine the relationship between family income and low birth weight did find, however, that among whites, women with family income below the federal poverty level in the year of birth were 80% more likely to

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***Poverty status had a statistically significant effect on both low birth weight and the neonatal mortality rate for whites but not for blacks.***

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have a low birth weight baby as compared with women whose family incomes were above the poverty level (this study statistically controlled for mothers' age, education, marital status, and smoking status). Further analysis also showed that the duration of poverty had an important effect; if a white woman was poor both at the time when she entered the longitudinal NLSY sample and at the time of her pregnancy (5 to 10 years later), she was more than three times more likely to deliver a low birth weight infant than a white woman who was not poor at both times. For black women in this sample, although the odds of having a low birth weight baby were twice the odds for white mothers, the probability of having a low birth weight baby was not related to family poverty status.<sup>14</sup>

Other studies that used county level data to examine the effects of income or poverty status and a number of pregnancy-related

health services on birth outcomes for white and black women also found that income or poverty status had a statistically significant effect on both low birth weight and the neonatal mortality rate for whites but not for blacks.<sup>15,16</sup>

### **Growth Stunting**

Although overt malnutrition and starvation are rare among poor children in the United States, deficits in children's nutritional status are associated with poverty. As described more fully in the Child Indicators article in this journal issue, stunting (low height for age), a measure of nutritional status, is more prevalent among poor than nonpoor children. Studies using data from the NLSY show that differentials in height for age between poor and nonpoor children are greater when long-term rather than single-year measures of poverty are used in models to predict stunting. These differentials by poverty status are large even in models that statistically control for many other family and child characteristics associated with poverty.<sup>17</sup>

### **Lead Poisoning**

Harmful effects of lead have been documented even at low levels of exposure. Health problems vary with length of exposure, intensity of lead in the environment, and the developmental stage of the child—with risks beginning prior to birth. At very young ages, lead exposure is linked to stunted growth,<sup>18</sup> hearing loss,<sup>19</sup> vitamin D metabolism damage, impaired blood production, and toxic effects on the kidneys.<sup>20</sup> Additionally, even a small increase in blood lead above the Centers for Disease Control and Prevention (CDC) current intervention threshold (10 µg/dL) is associated with a decrease in intelligence quotient (IQ).<sup>21</sup>

Today, deteriorating lead-based house paint remains the primary source of lead for young children. Infants and toddlers in old housing eat the sweet-tasting paint chips and breathe the lead dust from deteriorating paint. Four to five million children reside in homes with lead levels exceeding the accepted threshold for safety,<sup>22</sup> and more than 1.5 million children under six years of age have elevated blood lead levels.<sup>23</sup>

Using data from NHANES III (1988–1991), one study found that children's blood

lead levels declined as family income increased.<sup>23</sup> All other things being equal, mean blood lead levels were 9% lower for one- to five-year-olds in families with incomes twice the poverty level than for those who were poor. Overall blood levels were highest among one- to five-year-olds who were non-Hispanic blacks from low-income families in large central cities. The mean blood lead level for this group, 9.7 µg/dL, was just under the CDC's threshold for intervention and almost three times the mean for all one- to five-year-olds.

### Cognitive Abilities

As reported in Table 1, children living below the poverty threshold are 1.3 times as likely as nonpoor children to experience learning disabilities and developmental delays. Reliable measures of cognitive ability and school achievement for young children in the Children of the NLSY and IHDP data sets have been used in a number of studies to examine the relationship between cognitive ability and poverty in detail.<sup>6,24-26</sup> This article reports on several studies that control for a number of potentially important family characteristics and attempts to distinguish between the effects of long- and short-term poverty.

A recent study using data from the Children of the NLSY and the IHDP compared children in families with incomes less than half of the poverty threshold to children in families with incomes between 1.5 and twice the poverty threshold. The poorer children scored between 6 and 13 points lower on various standardized tests of IQ, verbal ability, and achievement.<sup>25</sup> These differences are very large from an educational perspective and were present even after controlling for maternal age, marital status, education, and ethnicity. A 6- to 13-point difference might mean, for example, the difference between being placed in a special education class or not. Children in families with incomes closer to, but still below, the poverty line also did worse than children in higher-income families, but the differences were smaller. The smallest differences appeared for the earliest (age two) measure of cognitive ability; however, the sizes of the effects were similar for children from three to eight. These findings suggest that the effects of poverty on children's cognitive development occur early.

The study also found that duration of poverty was an important factor in the lower scores of poor children on measures of cognitive ability. Children who lived in persistently poor families (defined in this study as poor over a four-year span) had scores on the various assessments six to nine points lower than children who were never poor.<sup>25</sup> Another analysis of the NLSY that controlled for a number of important maternal and child health characteristics showed that the effects of long-term poverty (based

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*The effects of long-term poverty on measures of children's cognitive ability were significantly greater than the effects of short-term poverty.*

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on family income averaged over 13 years prior to testing of the child) on measures of children's cognitive ability were significantly greater than the effects of short-term poverty (measured by income in the year of observation).<sup>26</sup>

A few studies link long-term family income to cognitive ability and achievement measured during the school years. Research on children's test scores at ages seven and eight found that the effects of income on these scores were similar in size to those reported for three-year-olds.<sup>25</sup> But research relating family income measured during adolescence on cognitive ability finds relatively smaller effects.<sup>27</sup> As summarized in the next section, these modest effects of income on cognitive ability are consistent with literature showing modest effects of income on schooling attainment, but both sets of studies may be biased by the fact that their measurement of parental income is restricted to the child's adolescent years. It is not yet possible to make conclusive statements regarding the size of the effects of poverty on children's long-term cognitive development.

### School Achievement Outcomes

Educational attainment is well recognized as a powerful predictor of experiences in later life. A comprehensive review of the relationship between parental income and school attainment, published in 1994, concluded that poverty limited school achievement but that the effect of income on the number of

school years completed was small.<sup>28</sup> In general, the studies suggested that a 10% increase in family income is associated with a 0.2% to 2% increase in the number of school years completed.<sup>28</sup>

Several more recent studies using different longitudinal data sets (the PSID, the NLSY, and Children of the NLSY) also find that poverty status has a small negative impact on high school graduation and years of schooling obtained. Much of the observed relationship between income and schooling appears to be related to a number of confounding factors such as parental education, family structure, and neighborhood characteristics.<sup>28-30</sup> Some of these studies suggest that the components of income (for example, AFDC) and the way income is measured (number of years in poverty versus annual family income or the ratio of income

into school, are not very sensitive to parental income differences.

A third, and potentially crucial, reason concerns the timing of economic deprivation. Few studies measure income from early childhood to adolescence, so there is no way to know whether poverty early in childhood has noteworthy effects on later outcomes such as school completion. Because family income varies over time,<sup>31</sup> income measured during adolescence, or even middle childhood, may not reflect income in early childhood. A recent study that attempted to evaluate how the timing of income might affect completed schooling found that family income averaged from birth to age 5 had a much more powerful effect on the number of school years a child completes than does family income measured either between ages 5 and 10 or between ages 11 and 15.<sup>7</sup> For low-income children, a \$10,000 increase in mean family income between birth and age 5 was associated with nearly a full-year increase in completed schooling. Similar increments to family income later in childhood had no significant impact, suggesting that income may indeed be an important determinant of completed schooling but that only income during the early childhood years matters.

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to the poverty threshold) may lead to somewhat different conclusions. But all the studies suggest that, after controlling for many appropriate confounding variables, the effects of poverty per se on school achievement are likely to be statistically significant, yet small. Based on the results of one study, the authors estimated that, if poverty were eliminated for all children, mean years of schooling for all children would increase by only 0.3% (less than half a month).<sup>30</sup>

Why do not the apparently strong effects of parental income on cognitive abilities and school achievement in the early childhood years translate into larger effects on completed schooling? One possible reason is that extrafamilial environments (for example, schools and neighborhoods) begin to matter as much or more for children than family conditions once children reach school age. A second possible reason is that school-related achievement depends on both ability and behavior. As is discussed in the Emotional and Behavioral Outcomes section, children's behavioral problems, measured either before or after the transi-

### **Emotional and Behavioral Outcomes**

Poor children suffer from emotional and behavioral problems more frequently than do nonpoor children (see Table 1). Emotional outcomes are often grouped along two dimensions: externalizing behaviors including aggression, fighting, and acting out, and internalizing behaviors such as anxiety, social withdrawal, and depression. Data regarding emotional outcomes are based on parental and teacher reports. This section reviews studies that distinguish between the effects of long- and short-term poverty on emotional outcomes of children at different ages.

One study of low birth weight five-year-olds using the IHDP data set found that children in persistently poor families had more internalizing and externalizing behavior problems than children who had never been poor. The analysis controlled for maternal education and family structure and defined long-term poverty as income below the



poverty threshold for each of four consecutive years. Short-term poverty (defined as poor in at least one of four years) was also associated with more behavioral problems, though the effects were not as large as those for persistent poverty.<sup>6</sup>

Two different studies using the NLSY report findings consistent with those of the IHDP study. Both found persistent poverty to be a significant predictor of some behavioral problems.<sup>26,32</sup> One study used data from the 1986 NLSY and found that for four- to eight-year-olds persistent poverty (defined as a specific percentage of years of life during which the child lived below the poverty level) was positively related to the presence of internalizing symptoms (such as dependence, anxiety, and unhappiness) even after controlling for current poverty status, mother's age, education, and marital status. In contrast, current poverty (defined by current family income below the poverty line) but not persistent poverty was associated with more externalizing problems (such as hyperactivity, peer conflict, and headstrong behavior).<sup>32</sup>

The second study used NLSY data from 1978–1991 and analyzed children ages 3 to 11. On average children living in long-term poverty (defined by the ratio of family income to the poverty level averaged over 13 years) ranked three to seven percentile points higher (indicating more problems) on a behavior problem index than children with incomes above the poverty line. After controlling for a range of factors including mother's characteristics, nutrition, and infant health behaviors, the difference remained though it dropped in magnitude. This study also found that children who experienced one year of poverty had more behavioral problems than children who had lived in long-term poverty.<sup>26</sup>

The above studies demonstrate that problematic emotional outcomes are associated with family poverty. However, it is important to note that the effects of poverty on emotional outcomes are not as large as those found in cognitive outcomes. Also these studies do not show that children in long-term poverty experience emotional problems with greater frequency or of the same type as children who experience only short-term poverty. These studies analyzed

data for young children. Few studies have examined the link between emotional outcomes and poverty for adolescents. One small study of 7th- to 10th-graders in the rural Midwest did not find a statistically significant relationship between poverty and emotional problems, either internalizing or externalizing.<sup>33</sup> Self-reporting by the adolescents rather than maternal reporting, as used in the data sets on younger children, may account for the differences found in the effects of income on emotional outcomes in this study as compared with the previously reviewed research. It may also be that younger children are more affected by poverty than older children.

These findings point to the need for further research to improve understanding of the link between income and children's emotional outcomes.

### Teenage Out-of-Wedlock Childbearing

The negative consequences for both mothers and children associated with births to unwed teen mothers make it a source of policy concern.<sup>34</sup> Although the rate of out-of-wedlock births among poor teens is almost three times as high as the rate among those from nonpoor families (see Table 1), the literature on linkages between family income and out-of-wedlock childbearing is not con-

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***Problematic emotional outcomes are associated with family poverty; however, the effects of poverty on emotional outcomes are not as large as its effects on cognitive outcomes.***

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clusive. A recent review of the evidence put it this way: “[P]arental income is negative and usually, but not always, significant. . . . The few reports of the quantitative effects of simulated changes in variables suggest that decreases in parental income . . . will lead to small increases in the probability that teen girls will experience a nonmarital birth.”<sup>28</sup>

A recent study, which used data from the PSID to investigate factors in teen out-of-wedlock births, found that variations in income around the poverty threshold were not predictive of a teenage birth but that the probability of a teenager's having an

out-of-wedlock birth declined significantly at family income levels above twice the poverty threshold.<sup>35</sup> The duration and timing of poverty had no effect on the probability of a teen out-of-wedlock birth. These findings are somewhat different from those reported for cognitive outcomes and school achievement. In the case of cognitive outcomes for young children, the variation in income mattered most to children at very low levels of income; for school achievement, the timing and duration of poverty seemed to have important differential effects on outcomes.

Why should poverty status matter more for schooling than for childbearing? This difference is consistent with the more general result that parental income appears more strongly linked with ability and achievement than with behavior. The factors influencing teenage out-of-wedlock childbearing are less

diation in the absence of a change in family income.

Research on the size and strength of the pathways through which income might influence child health and development is still scanty. In this section, five potential pathways are discussed: (1) health and nutrition, (2) the home environment, (3) parental interactions with children, (4) parental mental health, and (5) neighborhood conditions. Space limitations preclude a discussion of other potential pathways such as access to and use of prenatal care, access to pediatric care, exposure to environmental toxins, household stability, provision of learning experiences outside the home, quality of school attended, and peer groups. Further, few studies have tested pathway models using these variables.

### Health and Nutrition

Although health is itself an outcome, it can also be viewed as a pathway by which poverty influences other child outcomes, such as cognitive ability and school achievement. As discussed previously, poor children experience increased rates of low birth weight and elevated blood lead levels when compared with nonpoor children. These conditions have, in turn, been associated with reduced IQ and other measures of cognitive functioning in young children and, in the case of low birth weight, with increased rates of learning disabilities, grade retention, and school dropout in older children and youths.

A 1990 analysis indicated that the poverty-related health factors such as low birth weight, elevated blood lead levels, anemia,<sup>38</sup> and recurrent ear infections and hearing loss contributed to the differential in IQ scores between poor and nonpoor four-year-olds.<sup>39</sup> The findings suggest that the cumulative health disadvantage experienced by poor children on these four health measures may have accounted for as much as 13% to 20% of the difference in IQ between the poor and nonpoor four-year-olds during the 1970s and 1980s.<sup>39</sup>

As discussed in the Child Indicators article in this journal issue, malnutrition in childhood (as measured by anthropometric indicators) is associated with lower scores on tests of cognitive development. Deficits in these anthropometric measures are

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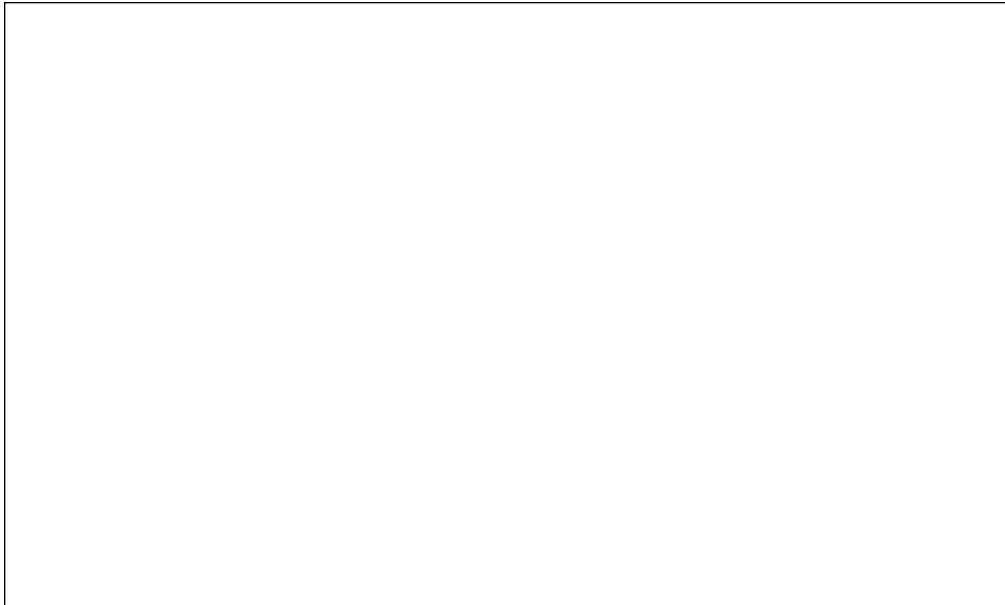
### *A child's home environment accounts for a substantial portion of the effects of family income on cognitive outcomes in young children.*

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well understood than the factors influencing schooling completion: interventions have generally been much less successful in altering teen birthrates than in keeping teens in school.<sup>36,37</sup>

### Pathways Through Which Poverty Operates

The research reviewed thus far suggests that living in poverty exacts a heavy toll on children. However, it does not shed light on the pathways or mechanisms by which low income exerts its effects on children. As the term is used in this discussion, a "pathway" is a mechanism through which poverty or income can influence a child outcome. By implication, this definition implies that a pathway should be causally related to both income and at least one child outcome. Exploration of these pathways is important for a more complete understanding of the effects of poverty on children; moreover, exploration of pathways can lead to the identification of leverage points that may be amenable to policy intervention and reme-



associated with poverty among children in the United States, and the effects can be substantial. One recent study found that the effect of stunting on short-term memory was equivalent to the difference in short-term memory between children in families that had experienced poverty for 13 years and children in families with incomes at least three times the poverty level.<sup>26</sup>

### Home Environment

A number of studies have found that a child's home environment—opportunities for learning, warmth of mother-child interactions, and the physical condition of the home—account for a substantial portion of the effects of family income on cognitive outcomes in young children. Some large longitudinal data sets use the HOME scale as a measure of the home environment. The HOME scale is made up of items that measure household resources, such as reading materials and toys, and parental practices, such as discipline methods. The HOME scale has been shown to be correlated with family income and poverty, with higher levels of income associated with improved home environments as measured by the scale.<sup>7,40</sup>

Several studies have found that differences in the home environment of higher- and lower-income children, as measured by the HOME scale, account for a substantial portion of the effect of income on the cognitive development of preschool children and on the achievement scores of elementary school children.<sup>6,26,37</sup> In one study, differ-

ences in the home environment also seemed to account for some of the effects of poverty status on behavioral problems. In addition, the provisions of learning experiences in the home (measured by specific subscales of the HOME scale) have been shown to account for up to half of the effect of poverty status on the IQ scores of five-year-olds.<sup>37,41</sup>

### Parental Interactions with Children

A number of studies have attempted to go beyond documentation of activities and materials in the home to capture the effects of parent-child interactions on child outcomes. Much of the work is based on small and/or community-based samples. That work suggests that child adjustment and achievement are facilitated by certain parental practices. There is also some evidence that poverty is linked to lower-quality parent-child interaction and to increased use of harsh punishment. This research suggests that parental practices may be an important pathway between economic resources and child outcomes.

Evidence of such a parental-practice pathway from research using large national data sets of the kind reviewed in this article is less consistent. One NLSY-based study found that currently poor mothers spanked their children more often than nonpoor mothers and that this harsh behavior was an important component of the effect of poverty on children's mental health.<sup>32</sup> Mothers' parenting behavior was not, however, found to be

an important pathway by which persistent poverty affected children's mental health. A more recent study using the National Survey of Families and Households found that the level of household income was only weakly related to effective parenting and that differences in parent practices did not account for much of the association between poverty and child well-being.<sup>42</sup>

Among adolescents, family economic pressure may lead to conflict with parents, resulting in lower school grades, reduced emotional health, and impaired social relationships.<sup>33,43</sup> Other work suggests that it may

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***Parents who are poor are likely to be less healthy, both emotionally and physically, than those who are not poor.***

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be income loss or economic uncertainty due to unemployment, underemployment, and unstable work conditions, rather than poverty or low income per se, that is a source for conflict between parents and teens leading to emotional and school problems.<sup>33,44</sup>

### **Parental Mental Health**

Parents who are poor are likely to be less healthy, both emotionally and physically, than those who are not poor.<sup>45</sup> And parental irritability and depressive symptoms are associated with more conflictual interactions with adolescents, leading to less satisfactory emotional, social, and cognitive development.<sup>43,46,47</sup> Some studies have established that parental mental health accounts for some of the effect of economic circumstances on child health and behavior. Additionally, poor parental mental health is associated with impaired parent-child interactions and less provision of learning experiences in the home.<sup>33,41,48</sup>

### **Neighborhood Conditions**

Another possible pathway through which family income operates has to do with the neighborhoods in which poor families reside. Poor parents are constrained in their choice of neighborhoods and schools. Low income may lead to residence in extremely poor neighborhoods characterized by social disorganization (crime, many unemployed adults, neighbors not monitoring the behav-

ior of adolescents) and few resources for child development (playgrounds, child care, health care facilities, parks, after-school programs).<sup>49,50</sup> The affluence of neighborhoods is associated with child and adolescent outcomes (intelligence test scores at ages 3 and 5 and high school graduation rates by age 20) over and above family poverty.<sup>37,51</sup> Neighborhood residence also seems to be associated with parenting practices, over and above family income and education.<sup>52</sup> Neighborhood effects on intelligence scores are in part mediated by the learning environment in the home.<sup>52,53</sup> Living in neighborhoods with high concentrations of poor people is associated with less provision of learning experiences in the homes of preschoolers, over and above the links seen between family income and learning experiences.

A key issue that has not been fully explored is the extent to which neighborhood effects may be overestimated because neighborhood characteristics also reflect the choices of neighborhood residents. One study that examined the effects of peer groups (as measured by the socioeconomic status of students in a respondent's school) on teenage pregnancy and school dropout behavior found that while student body socioeconomic status seemed to be an important predictor of both dropout and teen pregnancy rates, it did not appear to be related to those outcomes in statistical models that treated this peer characteristic as a matter of family choice.<sup>54</sup>

### **How Much Does Income Cause Child Outcomes?**

It may seem odd to raise this question after summarizing evidence indicating that family income does matter—across the childhood and adolescent years and for a number of indicators of well-being. However, these associations have been demonstrated when a relatively small set of family characteristics are controlled through statistical analyses. It is possible, therefore, that other important family characteristics have not been controlled for and that, as a result of this omission, the effects of income are estimated incorrectly. (For a discussion of omitted variables, see Box 1 in the article by Devaney, Ellwood, and Love in this journal issue.) Distinguishing between the effects on chil-

dren of poverty and its related events and conditions is crucial for public policy formulation. Programs that alter family income may not have intended benefits for children if the importance of family income has been mismeasured.

Despite the evidence reviewed in this article and elsewhere, there is an important segment of the population who believes that income per se may not appreciably affect child outcomes. This viewpoint sees parental income mainly as a proxy for other characteristics such as character (a strong work ethic) or genetic endowment that influence both children and parents. A recent book by Susan Mayer, *What Money Can't Buy: The Effect of Parental Income on Children's Outcomes*,<sup>55</sup> presents a series of tests to examine explicitly the effects of income on a set of child outcomes. In one test, measures of income *after* the occurrence of an outcome are added to statistical models of the effects of income and other characteristics on a child outcome. The idea behind this test is that unanticipated future income can capture unmeasured parental characteristics but cannot have caused the child outcome. The inclusion of future income frequently produced a large reduction in the estimated impact of prior parent income. Mayer also tries to estimate the effects on children of components of income (for example, asset income) that are independent of the actions of the family. Although these tests provide some support for the hypothesis that family income may not matter much for child outcomes, even Mayer admits that these statistical procedures are not without their problems. For example, prior income and future income are highly correlated, and if parents take reasonable expectations of future income into consideration in making decisions regarding the well-being of children, then the assumption that child outcomes are independent of future income, which underlies the first test, is violated.

A second approach to the problem that omitted variables may bias the estimation of the effects of income and poverty on children looks at siblings within families. Siblings reared in the same family share many of the same unmeasured family characteristics. Thus, comparing children at the same age within families makes it possible to look at the income of the family at different

time points (for example, if a firstborn was five years of age in 1985 and the second child was five years of age in 1988, it is possible to look at their achievement levels at this age and the average family income between 1980 and 1985 for the firstborn and between 1983 and 1988 for the second child). One study that used this approach found that sibling differences in income were associated with sibling differences in completed schooling, which gave support to the notion that family income matters.<sup>7</sup>

Perhaps the most convincing demonstration of the effects of income is to provide poor families with income in the context of a randomized trial. In four Income Maintenance/Negative Income Tax Experiments in the 1960s and 1970s, experimental treatment families received a guaranteed minimum income. (These experiments are discussed in more detail in the article by Janet Currie in this journal issue.) Substantial benefits resulting from increased income effects were found for child nutri-

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***Low income may lead to residence in extremely poor neighborhoods characterized by social disorganization and few resources for child development.***

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tion, early school achievement, and high school completion in some sites but not in others. These results might be viewed as inconclusive; however, since the site with the largest effects for younger children (North Carolina) was also the poorest, one interpretation of the results is that income effects are most important for the very poorest families.<sup>56,57</sup>

## Conclusion

The evidence reviewed in this article supports the conclusion that family income can substantially influence child and adolescent well-being. However, the associations between income and child outcomes are more complex and varied than suggested by the simple associations presented in Table 1. Family income seems to be more strongly related to children's ability and achievement-related outcomes than to emotional outcomes. In addition, the effects are particularly pronounced for children who

live below the poverty line for multiple years and for children who live in extreme poverty (that is, 50% or less of the poverty threshold). These income effects are probably not due to some unmeasured characteristics of low-income families: family income, in and of itself, does appear to matter.

The timing of poverty is also important, although this conclusion is based on only a small number of studies. Low income during the preschool and early school years exhibits the strongest correlation with low rates of high school completion, as compared with low income during the childhood and adolescent years.<sup>7,58</sup> Poor-quality schooling, which is correlated with high neighborhood poverty, may exacerbate this effect.<sup>59</sup> These findings suggest that early childhood interventions may be critical in reducing the impact of low income on children's lives.

The pathways through which low income influences children also suggest some general recommendations. Nutrition programs, especially if they target the most undernourished poor, may have beneficial effects on both physical and cognitive outcomes. Lead abatement and parental education programs may improve cognitive outcomes in poor children residing in inner-city neighborhoods where lead is still an important hazard.

Because about one-half of the effect of family income on cognitive ability is mediated by the home environment, including learn-

ing experiences in the home, interventions might profitably focus on working with parents. An example is the Learninggames curriculum in which parents are provided instruction, materials, and role playing in learning experiences.<sup>60</sup> Other effective learning-oriented programs might also be pursued.<sup>61-63</sup>

Finally, income policies (as discussed by Robert Plotnick in this journal issue) and in-kind support programs (as discussed by Devaney, Ellwood, and Love in this journal issue) can have immediate impact on the number of children living in poverty and on the circumstances in which they live. Most important, based on this review, would be efforts to eliminate deep and persistent poverty, especially during a child's early years. Support to families with older children may be desirable on other grounds, but the available research suggests that it will probably not have the same impact on child outcomes as programs focused on younger children.

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