

# Revisiting an old question: How much does parental income affect child outcomes?

Susan E. Mayer

---

Susan E. Mayer is Professor of Public Policy Studies at the University of Chicago.

---

Even casual observers note that the children of affluent parents are more likely to succeed in life than the children of poor parents. For example, compared to more affluent children, poor children:

- Score lower on tests of cognitive skill in early childhood;
- Have more behavior problems in school and at home;
- Are more likely to drop out of high school, and those who do graduate are less likely to enroll in or graduate college;
- Are more likely to have children at a young age; and
- Are more likely to be poor themselves when they are adults.

The most intuitive explanation for this difference is that rich parents can spend more than poor parents on their children and that these “investments” lead to better outcomes for their children. This intuition fit the interests of policymakers looking for simple solutions to alleviate poverty and its apparent by-products: If poor children fail because their parents cannot make sufficient monetary investments in their future, then government can improve the life chances of poor children by providing families with the means to make the investments or by providing the investments directly in the form of schooling, health care, and other human capital inputs. Such investments presumably also promote economic growth as the “higher quality” children grow to adulthood.

Consequently, it is no surprise that by far the most money spent by the federal government and states on income-tested programs goes to programs that increase the income of poor families. While most families benefit from universal transfers such as education, Table 1 shows that not counting

medical care, the vast amount of income-tested government spending goes to cash transfers. The combined amount spent on cash transfers, food stamps, and housing subsidies (which are near-cash transfers) was almost three times the amount spent on education, job training, and services for the poor combined in 2002. Historically the government spent even less on non-transfer help for families. In 1993, before the 1996 welfare changes took effect, government spending on income and near-income support for low-income families was almost four times more than education and services for the poor. The largest increases in non-income support programs since TANF has been in services to help parents work. These include child care and transportation services for parents receiving TANF. The program today uses only one-third of the 1996 block grant for cash benefits, the rest going towards services.

However, poor parents’ inability to invest in their children is not the only possible explanation for the relationship between family poverty and child well-being. Other parental characteristics associated with their poverty have been implicated, especially parental education and marital status. Neighborhood characteristics and parental behavior or “culture” have also been implicated. These explanations argue for policies other than income support to improve children’s well-being as adults.

Because our support for the poor largely relies on income support, I reassess the evidence on the importance of parental income to adult well-being before comparing the effect of income to the potential effect of other family background characteristics and the potential benefits of programs other than income support for improving the well-being of poor children.

For many years, research on the relationship between parental income and children’s outcomes followed the standard research trajectory of many big questions. First, correlational studies reinforced the basic observation that poor children did worse than rich children on an increasing list of outcomes. Then researchers began to increase the list of covari-

---

**Table 1**  
**Total (Federal, State, and Local) Spending for Income-Tested Benefits by Form of the Benefit (in Millions of Constant 2002 Dollars)**

Fiscal Year	Medical	Cash	Food	Housing	Education	Jobs and Training	Services
1973	\$44,485	\$57,011	\$15,843	\$15,519	\$7,484	\$4,024	\$9,128
1993	178,294	93,260	45,309	36,171	18,800	6,649	13,506
1998	214,412	101,403	38,890	37,432	20,068	5,416	18,896
2002	282,468	102,157	39,306	35,566	30,484	7,808	22,215

---

**Source:** V. Burke, “Cash and Noncash Benefits for Persons with Limited Income: Eligibility Rules, Recipient and Expenditure Data, Fiscal Years 2000–2002,” Congressional Research Service, November 25, 2003.

---

**Table 2**  
**Recent Research on the Effect of Family Income on Years of Schooling<sup>a</sup>**

Study	Outcome	Data	Model Notes	Estimated Effect of Parental Income
Ellwood and Kane	College enrollment	HSB, NELS88	One year of parental income; nonparametric nonlinear measure of income (quartiles); controls gender, race, ethnicity, mother's education, other background variables (not test scores), and tuition costs.	Going from 1st quartile (poor) to 2nd quartile = 10% greater chance for enrollment in 4-year college; 4% greater chance of enrolling in any post-secondary schooling. When high school achievement is controlled for = no differences. Magnitude of income increase is unknown.
Acemoglu and Pischke	College enrollment	NLS72, HSB, NELS88	Instrumental variable model based on changes over time in parental income net of income quartile; controls region fixed effects and returns to college.	10% increase in income = 1.1% increase in chance of enrolling in any college and 1.5% increase in chance of enrolling in 4-year college. Effects not bigger for poor and possibly bigger for families in the richest quartile.
Akee et al.	Educational attainment at age 19 and 21; High school graduation	Great Smoky Mountain Study of Youth	Compares children in Native American families who benefited from Casino profits to non-Native families that did not benefit; compares families by number of Native parents, which determine the size of the income increase; compare children by age which indicates length of higher income; uses child fixed effects for education outcomes.	No income effect on high school graduation or educational attainment for never poor children; for families that were ever poor receiving additional income = nearly 1 additional year of school and 30% greater chance of graduating high school. Note that the income increase was \$5,000–\$10,000/year or 1/4 to 1/3 of income for most families and as much as 100% for poor families.
Duncan, Ziol-Guest and Kalil	Years of completed schooling	PSID	Controls parents' test scores, expectations, personality variables, mother's age. Variables for income in early, middle childhood and adolescence; allows different linear estimates of the effect of income <\$25,000 and >\$25,000 and other functional forms.	No effect of parental income measured when child < 5; parental income measured at child age 6–10, \$10,000 increase in parental income = .65 additional years school for families <\$25,000, no effect for families >\$25,000; parental income measured at age 11–15 = no effect for families <\$25,000, increase of .09 years of school for families >\$25,000.

**Notes:** HSB is the High School and Beyond survey. NELS88 is the National Education Longitudinal Study begun in 1988. NLS72 is the National Longitudinal Study of the High School class of 1972. PSID is the Panel Study of Income Dynamics. Highlighted papers indicate some attempt at estimating a causal model.

<sup>a</sup>Mayer's prior review found that a 10 percent increase in income increased years of schooling by .024 to .104 years.

Studies referenced in this table are: D. Ellwood and T. Kane, "Who Is Getting a College Education? Family Background and the Growing Gaps in Enrollment," in *Securing the Future: Investing in Children from Birth to College*, eds. S. Danziger and J. Waldfogel (New York: Russell Sage Foundation, 2000); D. Acemoglu and J. F. Pischke, "Changes in the Wage Structure, Family Income, and Children's Education," NBER Working Papers No. 7986, 2000; R. K. Q. Akee, W. Copeland, G. Keeler, A. Angold, and J. Costello, "Parents' Incomes and Children's Outcomes: A Quasi-Experiment," *American Economic Journal: Applied Economics* 2, No. 1, (2010): 86–115; and G. Duncan, K. Ziol-Guest and A. Kalil, "Early Childhood Poverty and Adult Body Mass Index," *American Journal of Public Health* 99, No. 3, (2009): 527–532.

ates added to standard OLS models predicting the effect of parental income on children's outcomes. In the late 1990s, researchers seriously questioned the causal effect of parental income.<sup>1</sup> In 2000 I wrote a review of the research up to that time.<sup>2</sup> This article briefly summarizes my primary conclusions on what we have learned since then, and what that tells us about antipoverty policies.

## The research

In this article I focus on the "effect of parents' income" literature, which tries to isolate the effect of parental income on children's outcomes, in particular the effect of low parental income on poverty. In this review I consider only research in the United States.<sup>3</sup>

### Educational outcomes

Research on the relationship between parental income and educational outcomes can broadly be divided into research

on general educational attainment and borrowing constraint for college enrollment.

*Studies on educational attainment* usually find that an increase in parental income modestly increases the educational attainment of children. These studies are described in Table 2. In my previous review, I concluded that the evidence suggested that a 10 percent increase in parental income was associated with .024 to .104 additional years of schooling.<sup>4</sup> Most of these effects occur before high school. There is no strong evidence that the income effects are greater for children from low-income families compared to children from high-income families, or that income effects vary by age of child.

*Borrowing constraint and college enrollment* research is motivated by the fact that going to college is expensive. This research is summarized in Table 3. Poor families have fewer resources and more limited access to credit than richer families, which should make the children of poor families less

**Table 3**  
**Recent Research on the Effect of Short-Term Credit Constraints on College Enrollment**

Study	Outcome	Data	Model Notes	Estimated Effect of Parental Income
Carneiro and Heckman	College enrollment and completion	NLSY79	Non-parametric nonlinear measures of parental income (quartiles) measured in adolescence; controls race, gender, mother's age at birth, family composition, mother's education, and student AFQT.	Parental income has little effect on college enrollment net of test scores; about 5% of white males face a credit constraint to college entry, less for females and blacks, while similar rate for Hispanics. Income effects greater for richer quartiles.
Cameron and Heckman	College enrollment	NLSY79	Uses a dynamic discrete choice model of schooling decisions from age 15–24 to separate the influence of family income, other family background factors, AFQT scores, tuition and labor market opportunities.	Parental income in high school is weakly related to college going and does not explain much of the black-white gap. Parental income may be more important for educational transitions at younger ages.
Cameron and Taber		NLSY79	Estimates response of presumably constrained students to changes in cost of college (proxied by location of a college in the country) and opportunity costs (proxied by wage in low wage industry in county). Estimate 4 models including instrumental variable and structural models.	No evidence of borrowing constraint in any model; small measured effects are not statistically significant.
Keane; Keane and Wolpin	Educational attainment	NLSY79	Structural model of schooling decisions allowing for individual heterogeneity, borrowing limits, parental transfers (inferred from parental education) and labor market work while in school.	Parental transfers increase educational attainment but mainly for children of more highly educated parents. Reducing borrowing constraints has little effect on college going but reduces student labor supply.
Belley and Lochner	College attendance at age 21; High school graduation	NLSY79 and NLSY97	Income averaged over 3 years; controls student AFQT, race, gender, mother's age and education, family structure, and year of birth.	In NLSY79 going from 1st to 2nd quartile (on average about doubling income) = 1.3% increase in college attendance; in NLSY97 going from 1st to 2nd quartile = 2.4% increase in chance of going to college. Effects not bigger for poor. No effects for high school graduation.

**Notes:** NLSY is the National Longitudinal Sample of Youth; there are two samples, one begun in 1979 and one begun in 1997. AFQT is Armed Forces Qualification Test. I combine papers by the same authors that use substantially similar estimation models and come to the same conclusion.

Studies referenced in this table are: P. Carneiro and J. J. Heckman, "The Evidence on Credit Constraints in Post-Secondary Schooling," *The Economic Journal* 112 (October 2002): 705–734; P. Carneiro and J. J. Heckman, "Human Capital Policy," in *Inequality in America: What Role for Human Capital Policies*, eds. J. J. Heckman and A. Krueger (Cambridge: MIT Press, 2003); S. Cameron and J. J. Heckman, "Life Cycle Schooling and Dynamic Selection Bias: Models and Evidence for Five Cohorts of American Males," *Journal of Political Economy* 106 (1998): 262–333; S. Cameron and J. J. Heckman, "The Dynamics of Educational Attainment for Black, Hispanic, and White Males," *The Journal of Political Economy* 109, (2001): 455–499; S. V. Cameron and C. Taber, "Estimation of Educational Borrowing Constraints Using Returns to Schooling," *Journal of Political Economy* 112, No. 1 (2004): 132–182; M. Keane, "Financial Aid, Borrowing Constraints, and College Attendance: Evidence from Structural Estimates," *American Economic Review* 92 No. 2 (2002): 293–297; M. Keane and K. Wolpin, "The Effect of Parental Transfers and Borrowing Constraints on Educational Attainment," *International Economic Review* 42, 1051–1103; and P. Belley and L. Lochner, "The Changing Role of Family Income and Ability in Determining Educational Achievement," NBER Working Paper No. W13527, 2007.

likely to attend college. However, parental income is correlated with parental and therefore student cognitive skill, so at least part of the gap in college going between children from rich and poor families is presumably accounted for by differences in cognitive skill. Most recent research on borrowing constraints controls for students' cognitive test scores.

There is little evidence that short-term credit constraint reduces college enrollment.<sup>5</sup> However, as the costs of college have increased, the influence of credit constraint may have increased. Belley and Lochner find that the effect of parental income is greater using data from the National Longitudinal Sample of Youth (NLSY) panel that began in 1997, compared to the NLSY panel that began in 1979. Even with the more recent sample, their estimates imply that almost doubling income for families in the poorest income quartile only increases their children's chance of going to college by 2.4

percent.<sup>6</sup> Even with this small effect, the work demonstrates that the effect of parental income can change over time as the factors that influence the importance of money change.

### Adult earnings and employment

In my earlier review I noted that research on the effect of parental income on children's adult economic status left considerable uncertainty about the size of the effect but a best guess was that a 10 percent increase in parental income would increase a (male) child's wages by no more than 2 percent per year.<sup>7</sup> More recent studies find positive effects of parental income on adult wages and hours worked but there remains uncertainty about the size of the effect. These studies are described in Table 4. It appears that we still do not have sufficient research to draw strong conclusions about the effect of family income in childhood on adult earnings.

**Table 4**  
**Recent Research on the Effect of Childhood Family Income on Adult Income and Employment<sup>a</sup>**

Study	Outcome	Data	Model Notes	Estimated Effect of Parental Income
Wagmiller et al.	Employment at age 25	PSID	Uses a latent class model that captures duration, timing and length of exposure to poverty; controls race, gender, family structure, education and employment status of family head.	Never poor = 84.2% chance employed, long-term poor = 65% chance. Families poor some of the time had same probability as never poor.
Ellwood and Kane	Earnings	HSB, NELS88	1 year of parental income; nonparametric non-linear measure of income (quartiles); controls gender, race, ethnicity, mother's education, other background variables, and tuition costs.	Children from 1st quartile earn 19% less than children from 4th quartile; 3% points of that is due to demographics, 4.2% points to high school achievement, 4.4 % points to schooling and remainder is unaccounted for.
Duncan, Ziol-Guest and Kalil	Earnings, hours worked	PSID	Controls parents' test scores, expectations, personality variable. Separate variables for income in early, middle childhood and adolescence; allows different linear estimates of the effect of income <\$25,000 and >\$25,000 and other functional forms.	Parental income measured when child <5 years, \$1,000 increase in income = 5% increase in earnings for family income <\$25,000; additional .05% in earnings when family income >\$25,000. No effect when income is measured at ages 6–10 or 11–15. For parental income measured when child < 5 years, \$1,000 increase in income = 50 more annual work hours when income <\$25,000; 2 more annual work hours when income >\$25,000. No significant effect for income measured at later ages.
Shea	Son's income	PSID	Controls father's education, occupation, race; whether son lives in urban area and South. Uses father's union membership as an instrument for income assuming that, for the same job, union members earn more than nonunion workers and union membership is due to luck.	Effect close to zero and not statistically significant.

**Notes:** PSID is the Panel Study of Income Dynamics. HSB is the High School and Beyond survey. NELS88 is the National Education Longitudinal Study begun in 1988. Highlighted papers indicate some attempt at estimating a causal model.

<sup>a</sup>Mayer's prior review found that the best guess is that 10 percent increase in parental income was associated with an increase in adult wages of less than 2 percent.

Studies referenced in this table are: R. Wagmiller, M. C. Lennon, L. Kuang, P. Alberti, and J. L. Aber, "Dynamics of Family Disadvantage and Children's Life Chances," *American Sociological Review* 71, No. 5, (2006): 847–866; D. Ellwood and T. Kane, "Who Is Getting a College Education? Family Background and the Growing Gaps in Enrollment," in *Securing the Future: Investing in Children from Birth to College*, eds. S. Danziger and J. Waldfogel (New York: Russell Sage Foundation, 2000); G. Duncan, K. Ziol-Guest and A. Kalil, "Early Childhood Poverty and Adult Body Mass Index," *American Journal of Public Health* 99, No. 3, (2009): 527–532; and J. Shea, "Does Parents' Money Matter?" *Journal of Public Economics* 77, No. 2 (2000): 155–184.

### Cognitive skill

In my earlier literature review, I concluded that the best evidence implied that doubling parental income was likely to increase cognitive test scores by around 0.10 standard deviations. Two recent papers using different techniques both find that a \$1,000 increase in income is associated with an increase in cognitive test scores equal to 6 percent of a standard deviation.<sup>8</sup> These papers are described in Table 5. These more recent results are not necessarily inconsistent with the finding that an exogenous increase in income has a small effect on children's cognitive skills. These two studies consider additional income plus work requirements. Additional parental income with work may have beneficial effects by forcing (and enabling) low-income mothers to put their children into more-structured child care settings, whereas extra cash in isolation may do little to improve children's outcomes.

My updated conclusion is that parental income combined with work requirements may have a nontrivial effect on the cognitive test scores of young children in very poor families. Whether the improvements from an increase in parental

income are maintained through the remainder of childhood is unknown.

### Implications and issues for future research

When we ask about the relationship between poverty and child outcomes it is not completely clear whether we are asking about the low income of poor families or the complex set of circumstances that results in low income. If we are asking specifically about the relationship between parental income and children's outcomes, a fairly clear answer is emerging: parental income itself has a modest effect on children's outcomes and this effect is not necessarily greater for children from poor families compared to children from rich families.

In the United States today the poverty of a family has many causes and these causes rather than the poverty itself may create problems for children. This means that the policies that we implement to reduce the consequences of poverty on children must be aimed at the causes of parental poverty. If parents were the only source of investment in children, parental income would have a large effect on children's out-



**Table 5**  
**Recent Research on the Effects of Income on Cognitive Achievement in Childhood<sup>a</sup>**

Study	Outcome	Data	Model Notes	Estimated Effect of Parental Income
Guo	PIAT math and reading, PPVT children aged 5–14	NLSY and CNLSY (over sample of low income families)	Income measures are poverty ratio, years below poverty line and average income all measured birth to when the outcome is measured; controls mother AFQT, education and age, race, gender, and prenatal behaviors.	No effect of income on PIATs in early childhood. For adolescents PIAT-R 4.4 points lower if family always lived in poverty; weak income effects on PIAT-M. Young children in poverty four years before PPVT scored 6.9 points lower on PPVT, adolescents in poverty all years before test scored 4.1 points lower.
Dahl and Lochner	Combined PIAT math and reading scores for children aged 4–14	CNLSY (over sample of low income families)	Instrumental variable model based on changes in the EITC; controls for age, gender, mother's education, AFQT, and marital status.	\$1,000 increase in income raises combined reading and math scores by 6% of a standard deviation; effects fade after a year; effects are bigger for younger children and for children from poorer families. Note: all low income sample.
Morris, Duncan and Rodriguez	Achievement = parent or teacher report of child's relative achievement and PPVT; different measures at different ages	Micro data from 4 experimental welfare programs; children 2–15 years old at random assignment	Instrumental variable model based on random assignment into programs. Income data from administrative records and parent survey.	\$1,000 increase in income raises achievement by .01–.06 of a standard deviation for 2 to 5-year-olds, very little for older children.

**Notes:** NLSY is the National Longitudinal Sample of Youth. CNLSY is the Children of the NLSY. PIAT is the Peabody Individual Achievement Test. PPVT is the Peabody Picture Vocabulary Test (-R is Revised and -M is Form M). Highlighted papers indicate some attempt at estimating a causal model.

<sup>a</sup>Mayer's prior review found that doubling parental income increased test scores by around .10 of a standard deviation.

Studies referenced in this table are: G. Guo, "The Timing of the Influences of Cumulative Poverty on Children's Cognitive Ability and Achievement," *Social Forces* 77, No. 1, (2008): 257–287; G. Dahl and L. Lochner, "The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit"; and P. Morris, G. Duncan, and C. Rodriguez, "Does Money Really Matter? Estimating Impacts of Family Income on Children's Achievement with Data from Random-Assignment Experiments," unpublished manuscript, 2004. [http://www.gse.uci.edu/person/duncan\\_g/docs/1doesmoneymatter.pdf](http://www.gse.uci.edu/person/duncan_g/docs/1doesmoneymatter.pdf).

comes because investments in children would be highly correlated with parental income. A talented child born to bright, diligent, well-meaning parents who are too poor to feed the family might have trouble in school. When the government makes this relatively rare, other investments become more important in determining who succeeds and who does not. When poor children can get enough to eat but often cannot afford to go to school, variations in access to schooling rather than a nutritious diet will predict success. If the government then requires everyone to attend free public school up to age 16, variations in schooling after age 16 will predict success. Thus if the state equalizes most important material and pedagogic investments in children, social and psychological differences between parents and between children will explain a large percentage of the variation in the success of their children. The marginal returns to additional parental income will also fall. In the United States, antipoverty programs have largely focused on income support for poor families. But direct government investment in low-income children has also increased. Over the last 30 years or so in the United States, subsidies for child care, per-pupil expenditures for primary and secondary schooling, and college tuition aid have all increased. Government investments tend to increase total investment and equalize child outcomes.<sup>9</sup> In this context future efforts to reduce the effects of poverty should be aimed at ameliorating the causes of parental poverty.

It is also not entirely clear what the goal of policy might be when it comes to poverty and children, which is to say

that we have conflicting ideas about equality of opportunity. Would we be satisfied with policies that resulted in children of parents who were ever poor having the same probability of outcomes as the children of parents who were never poor? Or is the goal to reduce poverty in the next generation by reducing the effect of poverty on the current generation of children and thereby reduce the "cycle of poverty?" These are two very different goals requiring entirely different policies.

The difference in the outcomes of children who were ever in a poor family and children who were never in a poor family are not as different as most statistics on the effect of poverty on child outcomes suggest. A short bout of poverty has little lasting effect on children. Long-term poverty is harmful but it is harmful partly because of endowments. To assure that the outcomes of chronically poor children are equivalent to the outcomes of never poor children would take a set of policies that provided intense services and aids to these children. The income transfer programs that we currently rely on are unlikely to accomplish this goal even if they were made much more generous.

If our goal is to prevent poverty in the next generation by preventing the children of the poor from growing up to be poor, we might be able to accomplish it with a combination of education, training, and services that would maximize the employability of such children. We could also try to reduce the number of children who grow up "at risk" of becoming poor by increasing the number of families that "follow the

rules” by, for example, graduating high school, marrying, and working full time. However, neither of these strategies is likely to make much of a dent in poverty in the next generation. A good back-of-the-envelope estimate is that if we could have ensured that every child born in the 1960s or 1970s grew up in a household with both parents and with at least one parent employed full time, the poverty rate for these children once they were adults would decline by 10 percent to 15 percent. That is not a trivial amount, and this figure could probably be increased somewhat with even more energetic and effective government efforts to improve poor children’s outcomes. It is impossible to reduce the future poverty rate appreciably by correcting the behavior of current parents because most children who will grow up to be poor do not live in poor dysfunctional families.<sup>10</sup>

The fact that children from “low-risk” families account for most of tomorrow’s poor adults is what we call the “poverty prevention paradox.”<sup>11</sup> Adults who graduate high school, work full time, and marry have a very low risk of being poor. But having parents who do these things does not assure that their children will do them. Even children from “good” families become poor and there are so many more of these families that the poor families of the future mostly come from these “low-risk” families.

Unfortunately we do not yet have sufficient high-quality research to understand the relationship between parental poverty and children’s outcomes. This is partly because we have not defined the question well and partly because we have a paucity of relevant research. In particular, more work is required in five areas:

1. We need more research on the relationship between parental poverty and the factors that cause parental poverty on adult outcomes of children. It is easy to imagine that if poverty influences childhood outcomes such as cognitive skill or behavior problems, it will also affect the adult outcomes that are correlated with cognitive skill or behavior. But these pathways can prove to be very weak.
2. We need to assess the effect of childhood circumstances on a broader range of adult outcomes, notably marital status or adult relationships.
3. We need more causal research on factors associated with poverty such as parental mental and physical health, marital status (or the complexity of parental relationships), and drug and alcohol use, and we need research that tries to model complex clusters of circumstances. Some research on multiple risk factors tries to do this but these models are in an early stage of development and often lack strong theory.
4. In terms of policy we need more research on the long-term effects of programs and we need better comparisons of effects across programs. We especially need to look carefully at programs in adolescence and programs that specifically are aimed at increasing employability and earnings rather than cognitive skill.

5. We have surprisingly little research on the noncognitive skills developed in childhood that are associated with adult labor market success and relationship stability. ■

---

<sup>1</sup>D. Blau, “The Effect of Income on Child Development,” *Review of Economics and Statistics* 81, No. 2, (1999): 261–276; G. Duncan and J. Brooks-Gunn, “Urban Poverty, Welfare Reform, and Child Development,” in *Locked in the Poorhouse: Cities, Race, and Poverty in the U.S.*, eds. F. Harris and L. Curtis, (Lanham, MD: Rowman and Littlefield, 1998): 21–32. These studies used sibling fixed effects to control unobserved heterogeneity. S. Mayer, *What Money Can’t Buy: Family Income and Children’s Life Chances* (Cambridge: Harvard University Press, 1997), which assesses the causal effect of parental income, and an edited volume by Duncan and Brooks-Gunn, G. J. Duncan and J. Brooks-Gunn, eds., *Consequences of Growing up Poor* (New York: Russell Sage Press, 1997), emphasize non-linearity and other methodological problems with previous research and attempt to overcome some of these problems to produce better estimates.

<sup>2</sup>S. E. Mayer, *The Influence of Parental Income on Children’s Outcomes*, Report to the New Zealand Ministry of Social Development, 2002. <http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/research/influence-parental-income/index.html>

<sup>3</sup>All of the research estimates the marginal benefit of income; that is, the benefit of additional income given all the earnings, cash and non-cash transfers that families already have. If the effect of parental income is nonlinear, the effect should be smaller in societies where on average families are richer whether they are richer because of greater earnings or greater cash or non-cash transfers. This makes understanding differences in the estimated effect of parental income across countries difficult.

<sup>4</sup>Mayer, *The Influence of Parental Income on Children’s Outcomes*.

<sup>5</sup>See P. Carneiro and J. J. Heckman, “The Evidence on Credit Constraints in Post-Secondary Schooling,” *The Economic Journal* 112 (October 2002): 705–734; P. Carneiro and J. J. Heckman, “Human Capital Policy,” in *Inequality in America: What Role for Human Capital Policies*, eds. J. J. Heckman and A. Krueger (Cambridge: MIT Press, 2003); S. V. Cameron and C. Taber, “Estimation of Educational Borrowing Constraints Using Returns to Schooling,” *Journal of Political Economy* 112, No. 1 (2004): 132–182; M. Keane, “Financial Aid, Borrowing Constraints, and College Attendance: Evidence from Structural Estimates,” *American Economic Review* 92, No.2 (2002): 293–297; and M. Keane and K. Wolpin, “The Effect of Parental Transfers and Borrowing Constraints on Educational Attainment,” *International Economic Review* 42 (2001): 1051–1103.

<sup>6</sup>P. Belley and L. Lochner, “The Changing Role of Family Income and Ability in Determining Educational Achievement,” NBER Working Paper No. W13527, 2007.

<sup>7</sup>Mayer, *The Influence of Parental Income on Children’s Outcomes*.

<sup>8</sup>G. Dahl and L. Lochner, “The Impact of Family Income on Child Achievement: Evidence From the Earned Income Tax Credit,” NBER Working Paper No. 14599; and P. Morris, G. Duncan, and C. Rodriguez, “Using Welfare Reform Experiments to Estimate the Impact of Income on Child Achievement,” unpublished manuscript, Northwestern University, 2004. Both papers use techniques to control unobserved heterogeneity and focus on low-income populations.

<sup>9</sup>S. E. Mayer and L. Lopoo, “Government Spending and Intergenerational Mobility,” *Journal of Public Economics* 92, No. 1–2 (2008): 139–158; and S. E. Mayer, “How Did the Increase in Economic Inequality Affect Educational Attainment?” *American Journal of Sociology* 107, No. 1 (2001):1–32.

<sup>10</sup>J. Ludwig and S. E. Mayer, “‘Culture’ and The Intergenerational Transmission of Poverty: The Prevention Paradox,” *The Future of Children* 16, No. 2 (2006): 175–196.

<sup>11</sup>Ludwig and Mayer, “‘Culture’ and the Intergenerational Transmission of Poverty.”