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Income Support Associated With Improved Health Outcomes for Children, Many Studies Show

Refundable Tax Credits Among Programs That Boost Income

By Sam Waxman, Arloc Sherman, and Kris Cox

Income significantly contributes to opportunities for good health.¹ People with higher incomes can more easily afford to meet the full range of their children’s needs, from nutritious food and quality housing to medicine, transportation to the pediatrician, and healthy recreational activities, and they are more likely to live in neighborhoods with high-quality schools. Conversely, families struggling to purchase the basics not only can afford fewer of their children’s needs but may experience high — even unhealthy — levels of stress as a result. Their children tend to do worse in school, earn less as adults, and have worse health outcomes overall.²

Opportunities for good health are not distributed equally across communities. Across all racial and ethnic groups, Americans who are paid low wages have poorer self-reported health status.³ A history of structural racism and income and wealth inequality have contributed to particularly poor health outcomes for people of color, who are likelier to report their health as fair or poor than are white people.⁴ (See Figure 1.)

¹ See, for example, Paula A. Braveman *et al.*, “Socioeconomic Disparities in Health in the United States: What the Patterns Tell Us,” *American Journal of Public Health*, April 2010, 100 (S1): S186–S196, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2837459/>.

² Greg J. Duncan and Katherine Magnuson, “The Long Reach of Early Childhood Poverty,” *Pathways*, Winter 2011, http://inequality.stanford.edu/sites/default/files/PathwaysWinter11_Duncan.pdf; Caroline Ratcliffe, “Child Poverty and Adult Success,” Urban Institute, September 9, 2015, <http://www.urban.org/sites/default/files/alfresco/publication-pdfs/2000369-Child-Poverty-and-Adult-Success.pdf>.

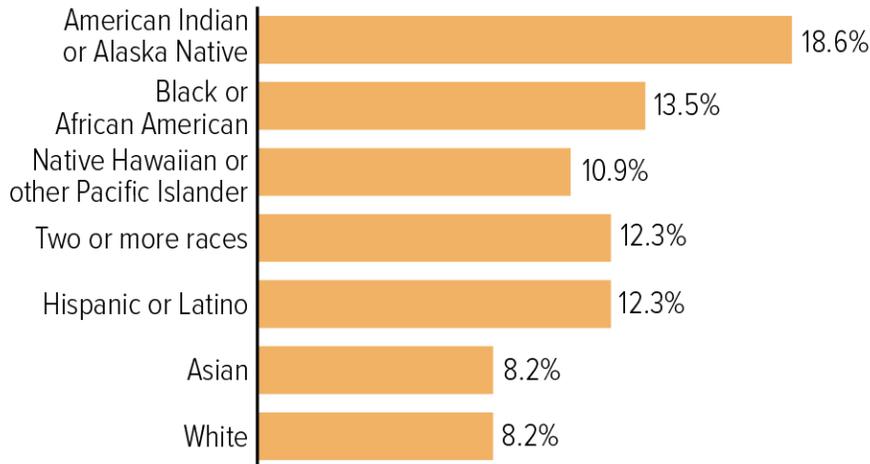
³ Data are only available by income for Black, Latinx, and white people. However, American Indians and Alaska Natives have lower incomes and are more likely to have incomes below the poverty level than white people. See: “Profile, American Indian/Alaska Native,” U.S. Department of Health and Human Services Office of Minority Health, last modified May 21, 2021, <https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=3&lvlid=62>.

⁴ National Center for Health Statistics, “Health, United States, 2017: With Special Feature on Mortality,” 2018, Table 45, Respondent-assessed fair-poor health status, by selected characteristics: United States, selected years 1991–2016, <https://www.cdc.gov/nchs/data/hus/2017/045.pdf>.

FIGURE 1

People of Color Generally Report Poorer Health

Percent reporting fair or poor health



Note: The race groups white, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and 2 or more races include persons of Hispanic and non-Hispanic origin.

Source: National Center for Health Statistics, 2018

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Economic security programs such as refundable tax credits, food assistance, and housing subsidies — which bolster income, help families afford basic needs, and keep millions of children above the poverty line — also are associated with improved health for children, families, and communities now and in the long term, a congressionally chartered report issued in 2019 by a National Academy of Sciences (NAS) panel on child poverty explained. “The weight of the causal evidence does indeed indicate that income poverty itself causes negative child outcomes, especially when poverty occurs in early childhood or persists throughout a large portion of childhood,” concluded the panel. More generous income assistance, they noted, is linked with healthier birth weights, lower maternal stress (measured by reduced stress hormone levels in the bloodstream), better childhood nutrition, higher school enrollment, higher reading and math test scores, higher high school graduation rates, less use of drugs and alcohol, and higher rates of college entry, among other outcomes.⁵

Refundable tax credits such as the Earned Income Tax Credit (EITC) and Child Tax Credit are a particularly important way to increase economic security for struggling families. Both credits are offered at the federal level; also, 29 states, Washington, D.C., and Puerto Rico have EITCs and several states have a child tax credit. Both credits boost families’ refunds at tax time, which helps them better meet their basic needs. (For 2021, the federal Child Tax Credit will be disbursed monthly from July to December as part of the American Rescue Plan’s tax credit expansions.) Research suggests that the additional income these tax credits provide may lead to:

⁵ National Academies of Sciences, Engineering, and Medicine, *A Roadmap to Reducing Child Poverty*, National Academies Press, 2019, <https://www.nap.edu/read/25246>.

- Significant improvements in health, including in maternal and infant health, consistent with increased access to healthy food and reduced food insecurity;
- Children in families receiving the credits doing better and completing more years of education (which itself is associated with better health); and
- Less stress on families struggling on low incomes.

The EITC, which has existed longer than the Child Tax Credit, has been studied extensively. According to the NAS committee, “Periodic increases in the generosity of the Earned Income Tax Credit program have improved children’s educational and health outcomes.” Although few studies focus on the Child Tax Credit, it shares key features with the EITC — including a focus on supplementing income through tax refunds for families with children and low earnings — that make it likely to share the EITC’s effects on children.

Investing more deeply in these tax credits and other economic security programs, as the federal government has done through the American Rescue Plan and as a number of states are considering, would improve both short- and long-term health outcomes for low-income children and bolster economic opportunity.⁶

FIGURE 2

Refundable Tax Credits and Other Income Assistance Boost Children’s School Achievement and Healthy Development



Improved infant and maternal health: Researchers have found links between increased earned income tax credits (EITCs) and improvements in infant health indicators such as birth weight and premature birth, as well as improved maternal mental health.



Better school performance: Elementary and middle school students whose families receive additional income, such as from larger refundable credits and assistance programs, tend to have stronger academic achievement in the year of receipt.



Greater college enrollment: Young children in low-income families that benefit from expanded state or federal EITCs are more likely to go to college, research finds. Researchers attribute this to lasting academic gains from higher EITCs in middle school and earlier. Increased tax refunds also boost college attendance by making college more affordable for families with high school seniors, research finds.

Note: For further details on the research see Arloc Sherman and Tazra Mitchell, “Economic Security Programs Help Low-Income Children Succeed Over Long Term, Many Studies Find,” CBPP, July 17, 2017.

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⁶ David Simon, Mark McInerney, and Sarah Goodell, “The Earned Income Tax Credit, Poverty, and Health,” *Health Affairs*, October 4, 2018, <https://bit.ly/3phiM5T>; Arloc Sherman and Tazra Mitchell, “Economic Security Programs Help Low-Income Children Succeed Over Long Term, Many Studies Find,” Center on Budget and Policy Priorities, July 17, 2017, <https://bit.ly/2WIWE8c>.

Income Improves Maternal and Child Health

Refundable credits are associated with better maternal health and healthier birth weights, a number of studies find. (See Figure 2.) For example, researchers at the University of California at Davis compared changes in birth outcomes for mothers who likely received the largest increases in their EITCs when the credit was expanded during the 1990s and mothers who likely received the smallest increases.⁷ They found that mothers who likely received the largest increases were likelier to receive prenatal care, including care before the critical third trimester. Infants born to mothers who likely received the largest increases had the greatest improvements across a number of health indicators, such as fewer low-weight births and premature births.⁸ Some research suggests that these reductions may have been greater for Black mothers.⁹

Research has found that more generous state EITCs are associated with improved birth outcomes, and that states with refundable EITCs — where the full credit is available to families, no matter what they owe in taxes — had the greatest reductions in low-birth-weight infants and largest increases in birth weights.¹⁰ Researchers are still exploring why living in a state that recently enacted or enlarged a state EITC is associated with significant improvements in low birth weight, with possible reasons including reductions in mothers' mental stress and increased access to private insurance and prenatal care.¹¹

Additional Income Cuts Food Insecurity, Improves Nutrition, With Positive Health Effects

The positive EITC findings are consistent with a larger literature of research that suggests government income assistance for struggling families leads to health gains. Low-income families that participate in other economic security programs have similarly tended to show both immediate and longer-term improvements in their children's health.

⁷ The authors controlled for changes to the Aid to Families with Dependent Children (AFDC) program and the adoption of Temporary Assistance for Needy Families (which replaced AFDC), changes in Medicaid or Children's Health Insurance Program income-eligibility thresholds, the unemployment rate, and the unique impact that belonging to a particular demographic or socio-economic group, living in a particular state, having a particular number of children, and idiosyncrasies of a particular year might have on the incidence of low birth weights for each group of women in their analysis.

⁸ Hilary W. Hoynes, Douglas L. Miller, and David Simon, "The EITC: Linking Income to Real Health Outcomes," University of California Davis Center for Poverty Research, Policy Brief, 2013, <http://poverty.ucdavis.edu/research-paper/policy-brief-linking-eitc-income-real-health-outcomes>.

⁹ Kelli A. Komro *et al.*, "Effects of State-Level Earned Income Tax Credit Laws on Birth Outcomes by Race and Ethnicity," *Health Equity*, March 13, 2019, <https://www.liebertpub.com/doi/full/10.1089/heq.2018.0061>.

¹⁰ Sara Markowitz *et al.*, "Effects of state-level Earned Income Tax Credit laws in the U.S. on maternal health behaviors and infant health outcomes," *Social Science & Medicine*, 194, October 16, 2017, p. 72. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5696026/>

¹¹ Kate W. Strully, David H. Rehkopf, and Ziming Xuan, "Effects of Prenatal Poverty on Infant Health: State Earned Income Tax Credits and Birth Weight," *American Sociological Review*, August 2010, pp. 1-29, <http://www.irp.wisc.edu/newsevents/workshops/2011/participants/papers/15-Strully.pdf>; Hoynes, Miller, and Simon, *op. cit.*; and William N. Evans and Craig L. Garthwaite, "Giving Mom a Break: The Impact of Higher EITC Payments on Maternal Health," *American Economic Journal: Economic Policy*, Vol. 6, No. 2, 2014, pp. 258-290. Health indicators include self-reported "excellent" and "very good" health days per month, number of bad mental health days in the past month, and biomarkers of elevated stress levels from physical, blood, and urine tests.

For instance, refundable tax credits and other economic security programs may improve health by supporting better nutrition.¹² As the Food Stamp Program (now called the Supplemental Nutrition Assistance Program, or SNAP) gradually expanded nationwide, children born in counties with access to food stamps had better health outcomes as adults — including lower rates of heart disease and obesity — than children without access to the program.¹³ Likewise, children of immigrants with lawful immigration status who benefitted from food stamp eligibility expansions in the late 1990s and early 2000s saw significant improvements in their health, including the share reported to be in “excellent” or “very good” health, and a reduction in overnight hospitalizations.¹⁴

Poor nutrition in early childhood has been linked with a lifelong shift in the body’s metabolism and a cluster of chronic metabolism-related illnesses, including diabetes, as well as high blood pressure and heart disease. That connection may help explain the lasting effect of food assistance access in childhood on reducing these illnesses in adulthood, researchers say.¹⁵ The findings suggest that income boosts such as refundable tax credits may confer similar benefits, especially if they are paid on a periodic basis as is the temporary expansion of the federal Child Tax Credit that was enacted in the American Rescue Plan.

Many parents struggling with low incomes face the challenge that healthier, more nutritious food is often also more expensive. Along with dedicated food assistance such as SNAP, the income provided by refundable tax credits can help reduce food insecurity for families and lower barriers to buying more nutritious food.

Refundable tax credits can enable families to spend more money on food, particularly on healthful food, studies suggest. One study suggested that families increased the amount they spent on food eaten at home after receiving an increased EITC in their tax refund.¹⁶ Another reviewed how families spend their once-yearly EITC refunds, finding that households eligible for the credit spent more on healthy items including fresh fruit and vegetables, meat and poultry, and dairy products during the months when most refunds are paid.¹⁷ And a 2014 study using data from the National

¹² Otto Lenhart, “The effects of income on health: new evidence from the Earned Income Tax Credit,” *Review of Economics of the Household*, Vol. 17, 2019, pp. 377–410, <https://link.springer.com/content/pdf/10.1007%2Fs11150-018-9429-x.pdf>; and David H. Rehkopf, Kate W. Strully, and William H. Dow, “The short-term impacts of earned income tax credit disbursement on health,” *International Journal of Epidemiology*, Vol. 43, No. 6, December 2014, pp. 1884-94, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4342690/>.

¹³ Hilary W. Hoynes, Diane Whitmore Schanzenbach, and Douglas Almond, “Long-Run Impacts of Childhood Access to the Safety Net,” *American Economic Review*, Vol. 106, 2016, pp. 903, 930; Douglas Almond, Hilary W. Hoynes, and Diane Whitmore Schanzenbach, “Inside the War on Poverty: The Impact of Food Stamps on Birth Outcomes,” *Review of Economics and Statistics*, Vol. 93, No. 2, May 2011, pp. 387-403, <https://www.irp.wisc.edu/publications/dps/pdfs/dp135908.pdf>. For a summary of additional research in this area, see also Sherman and Mitchell, *op. cit.*

¹⁴ Chloe N. East, “The Effect of Food Stamps on Children’s Health: Evidence from Immigrants’ Changing Eligibility,” University of Colorado Denver, September 2, 2016, <https://bit.ly/3pbNzB2>.

¹⁵ Almond, Hoynes, and Schanzenbach, *op. cit.*

¹⁶ Lenhart, *op. cit.*

¹⁷ Leslie McGranahan and Diane W. Schanzenbach, “The Earned Income Tax Credit and Food Consumption Patterns,” Federal Reserve Bank of Chicago, Working Paper No. 2013-14, <https://www.econstor.eu/bitstream/10419/96640/1/773868097.pdf>.

Health and Nutrition Examination Survey connected receipt of the EITC to improvements in sufficient food consumption and sufficient money for food for both women and men.¹⁸

Income Boosts Educational Opportunities

Research suggests that people who have completed more education tend to be healthier, in part because they can get better jobs and are likelier to have higher earnings, to live in neighborhoods with more green space and less pollution, and to have more resources to invest in healthier foods and opportunities to be active. Studies have also found that students who are healthy are more likely to succeed in school, possibly because they are less likely to miss class due to health problems, and to have fewer problems with vision, hearing, paying attention, and behavior.¹⁹ Additional income, such as from refundable tax credits, as well as other economic security programs, can help children do better and complete more K-12 schooling and higher education.

Additional income, such as what the EITC and other assistance programs provide, has been linked to better educational outcomes while children are in school. Students living in households with additional income from the EITC had significantly larger combined math and reading test scores, according to a study of nearly two decades' worth of data on mothers and children.²⁰ Another study, examining a series of federal and state EITC expansions, found that in years and states when lawmakers increased the EITC, children's test scores rose — particularly in math — in both elementary and middle school.²¹ Likewise, a study that matched tax records with school performance for 2.5 million students in grades 3 to 8 reported an association between income from the EITC and Child Tax Credit and higher reading and math scores.²² The EITC may play a

¹⁸ Rehkopf, Strully, and Dow, *op. cit.*

¹⁹ Virginia Commonwealth University Center on Society and Health, "Why Education Matters to Health: Exploring the Causes," February 13, 2015, <https://societyhealth.vcu.edu/work/the-projects/why-education-matters-to-health-exploring-the-causes.html>.

²⁰ Gordon Dahl and Lance Lochner, "The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit," *American Economic Review*, Vol. 102, No. 5, August 2012, pp. 1927-1956, <http://www.aeaweb.org/articles.php?doi=10.1257/aer.102.5.1927>. In 2017, Dahl and Lochner revised their estimates for the effect on combined math and reading scores to 4 percent of a standard deviation from 6 percent, but concluded that the revision did not change the study's qualitative conclusions. When adjusting those effects into 2013 dollars, their findings suggest that the EITC raised test scores by 3 percent of a standard deviation for each additional \$1,000 of income. See Gordon Dahl and Lance Lochner, "Correction and Addendum to 'The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit,'" March 1, 2016, <http://econweb.ucsd.edu/~gdahl/papers/children-and-EITC-correction-addendum.pdf>; and Gordon Dahl and Lance Lochner, "The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit: Reply," *American Economic Review*, Vol. 107, No. 2, 2017, pp. 629-631.

²¹ Michelle Maxfield, "The Effects of the Earned Income Tax Credit on Child Achievement and Long-Term Educational Attainment," Michigan State University Job Market Paper, November 14, 2013, <http://ippssr.msu.edu/research/effects-earned-income-tax-credit-child-achievement-and-long-term-educational-attainment>.

²² Raj Chetty, John N. Friedman, and Jonah Rockoff, "New Evidence on the Long-Term Impacts of Tax Credits," Statistics of Income Paper Series, November 2011, <http://www.irs.gov/pub/irs-soi/11rpchettyfriedmanrockoff.pdf>.

particularly important role in helping children of color improve their math achievement and complete high school, some studies suggest.²³

Other programs that help families with children afford their basic needs, like cash assistance pilot programs, have also been linked to stronger academic achievement, including higher test scores and increased high school graduation rates, and to increased earnings later in life.²⁴

Income assistance programs may also improve higher education access and outcomes, research suggests, not only by improving educational attainment, but also by making college more affordable. According to one study, children in families eligible for the largest EITC expansions in the early 1990s were more likely to complete high school by age 19 and to complete one or more years of college by age 19.²⁵ Another estimates that for a high school student whose family makes around the amount needed to qualify for the maximum EITC, as little as \$1,000 in tax refunds received in the spring of senior year (in 2015 dollars) is linked to an increase of about 2 percent in the relative likelihood of entering college the following year (or just over 0.4 percentage points, compared to a 21 percent national entry rate). The authors note suggestive evidence that that these positive enrollment effects last for four years after high school.²⁶

As economists Austin Nichols and Jesse Rothstein summarize in a 2015 review of the literature on the EITC: “Taking all of the estimates together, there is robust evidence of quite large effects of the EITC on children’s academic achievement and attainment, with potentially important consequences for later-life outcomes.”²⁷

Additional evidence of the positive effects of income support comes from a series of cross-program comparisons of several anti-poverty programs and pilots aimed at helping people move from cash assistance to work in the United States and Canada in the 1990s. When programs provided more generous income assistance, the comparisons consistently showed better academic performance among young children starting school. The more the programs raised participating families’ incomes, the more their children’s academic achievement rose, relative to peers assigned to a traditional, less generous assistance program. (See Figure 3.) The five most generous programs

²³ Maxfield, *op. cit.*; Katherine Micheltore, “The Effect of Income on Educational Attainment: Evidence from State Earned Income Tax Credit Expansions,” November 2013, <https://ssrn.com/abstract=2356444>; Dahl and Lochner, 2012, *op. cit.*

²⁴ See Hoynes, Whitmore Schanzenbach, and Almond, *op. cit.*; Greg Duncan, Pamela Morris, and Chris Rodrigues, “Does Money Really Matter? Estimating Impacts of Family Income on Young Children’s Achievement with Data from Random-Assignment Experiments,” *Developmental Psychology*, Vol. 47, No. 5, 2011; Randall K. Q. Akee *et al.*, “Parents’ Incomes and Children’s Outcomes: A Quasi-Experiment Using Transfer Payments from Casino Profits,” *American Economic Journal: Applied Economics*, Vol. 2, No. 1, 2010, <https://bit.ly/3mMl5fl>.

²⁵ Maxfield, *op. cit.*; Chetty, Friedman, and Rockoff, *op. cit.*

²⁶ Dayanand S. Manoli and Nicholas Turner, “Cash-on-hand and College Enrollment: Evidence From Population Tax Data and Policy Nonlinearities,” National Bureau of Economic Research Working Paper No. 19836, revised April 2016, <http://www.nber.org/papers/w19836>. The researchers studied effects on high school seniors whose family incomes were near the first kink point of the EITC benefit schedule.

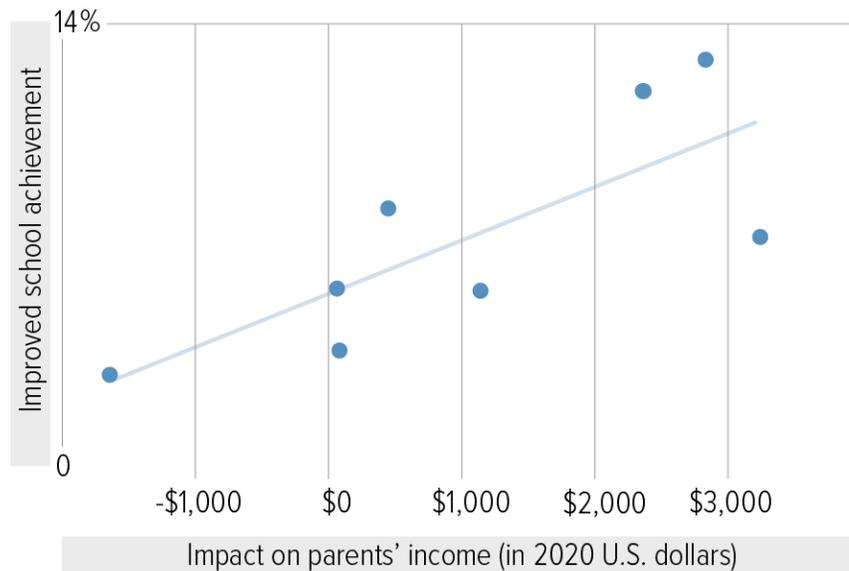
²⁷ Austin Nichols and Jesse Rothstein, “The Earned Income Tax Credit (EITC),” National Bureau of Economic Research Working Paper No. 21211, May 2015, p. 5, <http://www.nber.org/papers/w21211.pdf>.

raised average income by \$1,700 a year.²⁸ In a related earlier study of several of the same interventions, participation in the more generous programs raised low-income children's average test scores from the equivalent of the 25th percentile to the 30th percentile.²⁹

FIGURE 3

The More Programs Raised Parents' Income (When Children Were Ages 2 to 5), The More They Tended to Lift Children's Later Achievement in School

Among 8 anti-poverty and welfare-to-work pilot programs



Note: The diagonal line shows the average relationship between the eight programs' impacts on family income and on young children's school achievement. For each \$1,000 added to average family income, programs tended to raise achievement by 6 percent of a standardized measure of academic achievement.

Source: Pamela Morris, Greg J. Duncan, Christopher Rodrigues, "Does Money Really Matter? Estimating Impacts of Family Income on Children's Achievement with Data from Random-Assignment Experiments," (MDRC, April 2004), as cited in Morris, Gennetian and Duncan (2005).

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Income Eases the Damaging Stress of Hardship

Intense worry about meeting a family's urgent needs can preoccupy parents or other caregivers, hindering them from giving the kind of steady and reassuring parenting that helps children thrive.

²⁸ Pamela A. Morris, Lisa A. Gennetian, and Greg J. Duncan, "Effects of Welfare and Employment Policies on Young Children: New Findings on Policy Experiments Conducted in the Early 1990s," *Social Policy Report*, Vol. 19, No. 2, 2005, <http://www.srcd.org/sites/default/files/documents/spr19-2.pdf>.

²⁹ Pamela A. Morris, "The Effects of Welfare Reform Policies on Children," *Social Policy Report*, Vol. 16, No. 1, 2002, <http://srcd.org/sites/default/files/documents/spr16-1.pdf>.

When that happens, children tend to fare worse in school and on a range of emotional and behavioral outcomes.³⁰

Moreover, when a parent's stress is strong and sustained early in their child's life or in pregnancy, it may result in what is known as "toxic stress" for the child, which is associated with later reduced health and other poor outcomes.³¹ One study found that temporary spells of low income in pregnancy tended to coincide with a rise in the mother's stress hormone cortisol. High cortisol in pregnancy, in turn, was associated with "a year less schooling, a verbal IQ score that is five points lower and a 48 percent increase in the number of chronic [health] conditions" for the exposed children by age 7, compared to their own siblings born when the family had lower stress (and, usually, higher income).³² High childhood stress has been linked to a host of inflammatory diseases later in life, such as early-onset arthritis.³³

Income support appears to help reduce the stress on families struggling on low incomes. Mothers targeted by the 1993 expansion of the EITC showed signs of reduced stress such as less inflammation and lower diastolic blood pressure.³⁴

Researchers continue to explore why more adequate family income helps children over the long term. The added income may help, for example, by reducing severe poverty-related stress or by helping families afford better learning environments from child care through college.

Important gains for children have been found both in programs that boost income by raising parental employment and in programs that raise income without an increase in parental employment. Overall, the evidence suggests that the additional income provided by economic security programs and refundable tax credits can contribute to better health outcomes for children in the short and long term.

³⁰ April S. Masarik and Rand D. Conger, "Stress and Child Development: A Review of the Family Stress Model," *Current Opinion in Psychology*, Vol. 13, pp. 85-90, https://scholarworks.boisestate.edu/cgi/viewcontent.cgi?article=1238&context=psych_facpubs; Rand D. Conger *et al.*, "Economic Stress, Coercive Family Process, and Developmental Problems of Adolescents," *Child Development*, Vol. 65, No. 2, April 1994, <https://www.jstor.org/stable/1131401>; Rand D. Conger *et al.*, "Economic pressure in African American families: a replication and extension of the family stress model," *Developmental Psychology*, Vol. 38, No. 2, March 2002, <https://pubmed.ncbi.nlm.nih.gov/11881755/>.

³¹ National Scientific Council on the Developing Child, "Connecting the Brain to the Rest of the Body: Early Childhood Development and Lifelong Health Are Deeply Intertwined," Working Paper No. 15, June 2020, <https://developingchild.harvard.edu/resources/connecting-the-brain-to-the-rest-of-the-body-early-childhood-development-and-lifelong-health-are-deeply-intertwined/>.

³² Anna Aizer, Laura Stroud, and Stephen Buka, "Maternal Stress and Child Outcomes: Evidence from Siblings," National Bureau of Economic Research Working Paper No. 18422, September 2012, <https://www.nber.org/papers/w18422>.

³³ Greg Duncan, Katherine Magnuson, and Elizabeth Votruba-Drzal, "Boosting Family Income to Promote Child Development," *Future of Children*, Vol. 24, No. 1, Spring 2014, p. 109, https://www.fcd-us.org/assets/2014/07/24_01_05.pdf.

³⁴ Evans and Garthwaite, *op. cit.*