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Article

The Program on Children

NBER Reporter

Provided in Cooperation with:

National Bureau of Economic Research (NBER), Cambridge, Mass.

Suggested Citation: Currie, Janet; Aizer, Anna (2016) : The Program on Children, NBER Reporter, National Bureau of Economic Research (NBER), Cambridge, MA, Iss. 4, pp. 1-11

This Version is available at:

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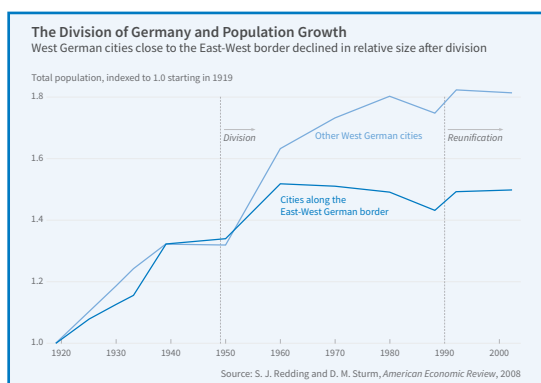
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The Program on Children

Janet Currie and Anna Aizer*

U.S. public programs that are targeted to children and youth have grown rapidly in recent decades. This trend has generated a substantial volume of research devoted to program evaluation. At the same time, researchers have developed an expanded conception of human capital and how it develops over the life course. This has drawn attention to children's physical and mental health, as well as to factors such as environmental exposures and maternal stress that influence the development of both non-cognitive and cognitive skills. Researchers in the Program on Children have been active contributors both to the evaluation of programs for children and to our developing understanding of the roots of human capital formation. This review provides a partial summary of this work. The number of research studies in the last eight years unfortunately makes it impossible to discuss all of the relevant contributions.

Long Run Consequences of Conditions in Early Life

The original "fetal origins" hypothesis held that poor nutrition during the fetal period could have persistent effects on metabolism that could lead to adult disease. Economists in the children's group have broadened the scope of inquiry beyond a narrow focus on fetal nutrition to examine factors beyond prenatal nutrition, shocks in early childhood as well as the fetal period, and a much broader array of outcomes. Douglas Almond, Bhashkar Mazumder, and Reyn Van Ewijk show, for example, that nutritional restriction due to Ramadan fasting is associated with lower child test scores at age seven.¹ Joseph Ferrie

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and Karen Rolf show that socioeconomic status in a household when children are ages 0 to five is historically associated with longevity and health in

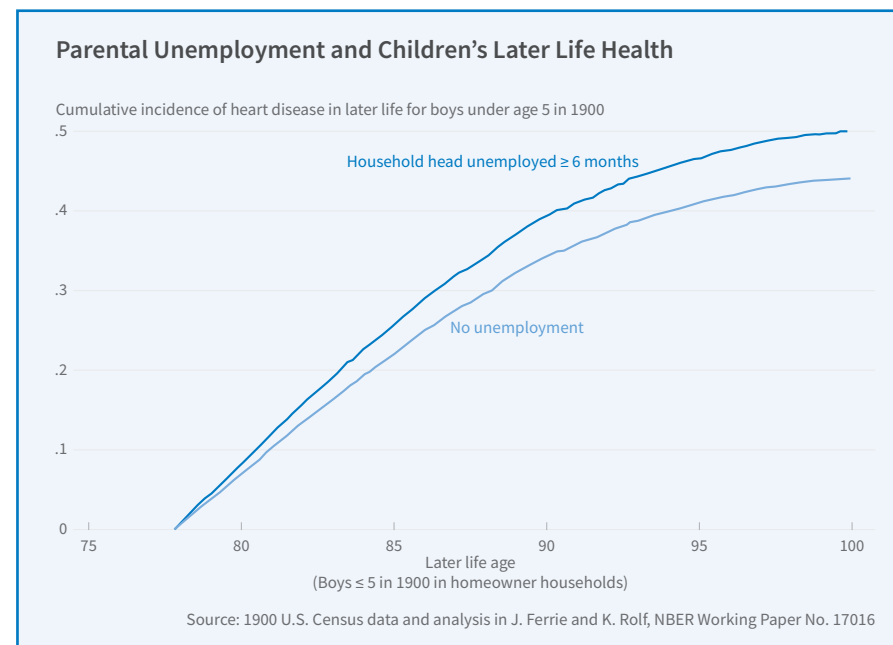


Figure 1

old age [Figure 1].² David Autor, David Figlio, Krzysztof Karbownik, Jeffrey Roth, and Melanie Wasserman link contemporary birth and schooling records in Florida to show that disadvantaged boys tend to have lower test scores, more disciplinary problems, and less likelihood of completing

The Program on Children

The Program on Children, which was launched in 1993 as the program on the Economic Well-Being of Children, has 134 affiliated researchers. It has produced about 600 NBER Working Papers since the last review in *The NBER Reporter*, which former program director Jonathan Gruber prepared in 2008.

Many of the first economic studies concerning the well-being of children focused either on family formation and parental behavior or on formal education, including both K–12 and college. Today, these topics remain important.

Roughly one quarter of the studies that are part of the Program on Children fall under the auspices of the NBER Education Program. Roughly as many studies concern children's well-being in developing countries, and fall within the purview of the Development Economics Program. This review does not summarize either of these active research areas.

high school.³ Anna Aizer, Shari Eli, Ferrie, and Adriana Lleras-Muney show that cash transfers to poor families at the early decades of the 20th century led to increases in the income and longevity of children in those households.⁴ Similarly Fredrik Andersson, John Haltiwanger, Mark Kutzbach, Giordano Palloni, Henry Pollakowski, and Daniel Weinberg show that, once the endogeneity of public housing use is accounted for, childhood residence in supported housing, which has a large cash value, has positive effects on young adult earnings and reduces the probability of incarceration.⁵ A possible caution: Gordon Dahl, Andreas Ravndal Kostoi, and Magne Mogstad show that family welfare participation can increase the probability that children grow up to participate themselves.⁶

Neighborhood conditions while young are another important determinant of longer-term outcomes. Jens Ludwig, Greg Duncan, Lisa Gennetian, Lawrence Katz, Ronald Kessler, Jeffrey Kling, and Lisa Sanbonmatsu summarize long-term effects of the Moving to Opportunity experiment, which enabled some poor families to move to less-poor neighborhoods, and find relatively little effect on children in those families.⁷ However, Raj Chetty, Nathaniel Hendren, and Katz find that the younger children in those families did benefit from moving in terms of higher future incomes [Figure 2].⁸ Chetty, Hendren, Patrick Kline, and Emmanuel Saez argue that features of neighborhoods that promote social mobility include low residential segregation, less income inequality, better schools, more social capital, and more family stability.⁹

Many Program on Children researchers document longer-term effects of specific policy initiatives. Hilary Hoynes, Diane Schanzenbach, and Douglas Almond find positive effects of childhood participation in the Food Stamp Program on future adult health, as measured by reductions in rates of high blood pressure, obesity, and diabetes.¹⁰ Gabriella Conti, James Heckman, and Rodrigo Pinto find improvements in the adult health of participants in two model preschool programs,¹¹ while Heckman, Pinto, and Peter Savelyev argue that much of this effect is operating through changes in personality traits.¹² On a cautionary note, Michael Baker, Jonathan Gruber, and Kevin Milligan find negative effects of a Quebec universal child care program on children's non-cognitive skills, underscoring the importance of program quality.¹³

Expansions of Medicaid and the Value of Medical Care

One of the most important policies that affected children born in the late 20th century was the expansion of public health insurance under the Medicaid program. State governments were first incentivized and then required to expand coverage to children in poor families, and many states expanded coverage to children with family incomes up to 200 percent of the federal poverty line. Because the expansions occurred at different times in different states and affected some age groups and not others, it is possible to identify the effect of insurance.

Currie, Sandra Decker, and Wanchuan Lin,¹⁴ Bruce Meyer and Laura Wherry,¹⁵ David Brown, Amanda Kowalski, and Ithai Lurie,¹⁶ and Wherry, Sarah Miller, Robert Kaestner, and Meyer¹⁷ all examine the long-term effect of these expansions on individuals who gained coverage as young children. They focus on different datasets and find positive effects on

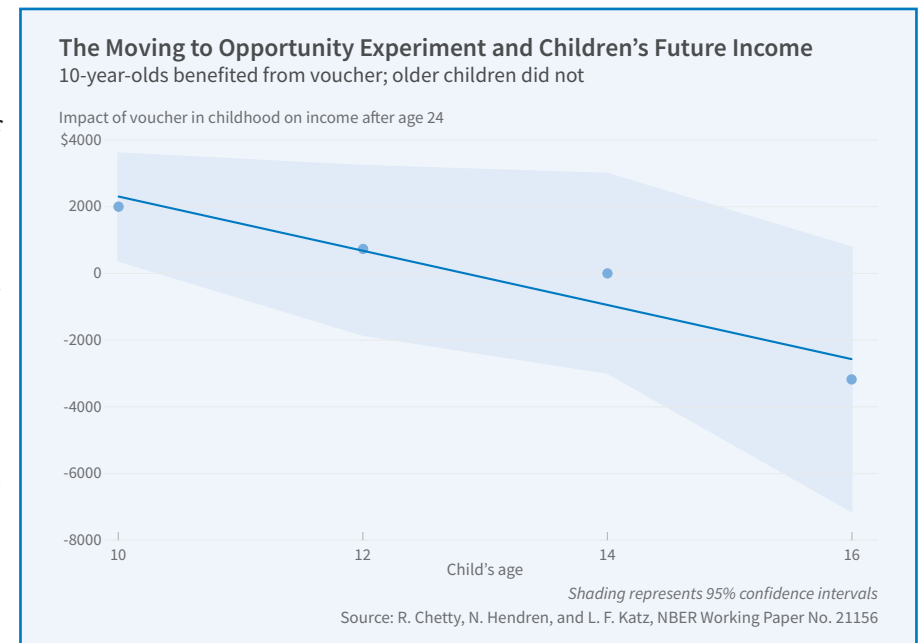


Figure 2

diverse young adult outcomes, including maternal reports of health, hospitalization for chronic conditions, and employment and earnings. Figure 3, from Wherry et al. (on the following page), shows the reduction in hospitalizations for chronic conditions among young adults who had Medicaid coverage from early childhood. Those born after September 1, 1983, were covered, whereas those born just before that date were never eligible. Currie and Hannes Schwandt argue that these expansions of access to care may explain some of the large reductions in mortality inequality among children over the past 20 years.¹⁸

These findings imply a large positive value for the medical care received at the margin, an inference borne out by Almond, Joseph Doyle, Kowalski, and Heidi Williams who

The Impact of Additional Childhood Medicaid Eligibility

Hospitalization data for 21- to 28-year-old blacks in 2009

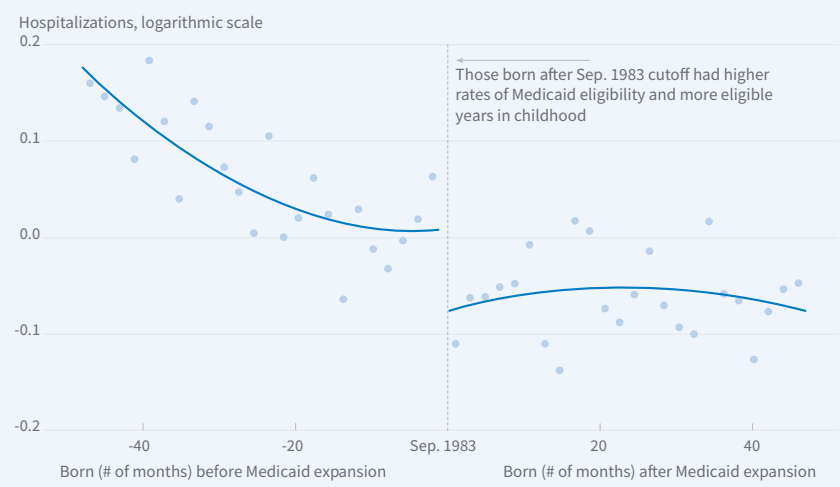


Figure 3

estimate that the statistical cost of saving a very low birth weight's life was about \$550,000 in 2006 dollars.¹⁹ At the same time, Currie and Bentley MacLeod²⁰ and Erin Johnson and Marit Rehaavi²¹ study the incidence of C-sections, and conclude that many are probably unnecessary.

Stress and Mental Health

Researchers in the Program on Children have moved from focusing only on cognitive skills, to thinking about non-cognitive skills (such as social skills) and physical health, to explicitly studying mental health and its role in promoting positive future outcomes.

Using a sibling fixed effects design, Jason Fletcher examines ADHD, one of the most prevalent childhood mental health conditions and finds large negative impacts on employment, welfare use, and earnings.²² While this finding would seem to argue that treatment of ADHD should have large positive effects, Currie, Mark Stabile, and Lauren Jones find that increases in drug treatment that accompanied an expansion of drug coverage in Quebec had little positive effect on educational outcomes or emotional functioning, suggesting that drug therapy alone may not be enough to improve outcomes.²³ Susan Busch, Ezra Golberstein, and Ellen Meara examine the use of antidepressants among adolescents and find that FDA “black box” warnings — the most stringent warnings used in prescription drug labeling — discouraged antidepressant use and led to increases in risky behaviors and small reductions in grade point averages.²⁴ Mark Anderson, Resul Cesur, and Erdal Tekin further argue that depression increases adolescent propensity to engage in property crime, though not violent crime or selling drugs.²⁵ Together these papers

suggest that many children suffer from poor mental health and that more research into how it can be treated appropriately is needed.

Acute stress, both among mothers and among children, may be one root cause of poor mental health. Aizer, Laura Stroud, and Stephen Buka exploit unique data on maternal cortisol levels during pregnancy and find, using sibling comparisons, that children exposed to high levels of this “stress hormone” suffer negative effects on their cognitive functioning and motor development.²⁶ Moreover, mothers of lower socioeconomic status have higher cortisol levels, suggesting one mechanism for the intergenerational transmission of poverty. This is consistent with work by William Evans and Craig Garthwaite showing that Earned Income Tax Credit (EITC) payments are associated with improved maternal mental health and reduction of certain biomarkers for

stress.²⁷

A source of stress that is more common among mothers of lower socioeconomic status is the death of a family member. Petra Persson and Maya Rossin-Slater compare children whose mothers experienced loss of a family member while the children were in utero to those who experienced such a loss in the first year after birth; they find that the former group were more likely to suffer from mental health problems including ADHD, anxiety, and depression in later life.²⁸ Sandra Black, Paul Devereux, and Kjell Salvanes also investigate the long-term effects of the mother experiencing a death in the family during pregnancy. They find negative effects on birth outcomes, but do not find negative effects on adult outcomes such as education, employment, and earnings.²⁹

Currie and Rossin-Slater examine the effect of maternal residence along the predicted path of a hurricane during pregnancy and find increases in abnormal conditions of the newborn.³⁰ Seth Gershenson and Tekin find that stress due to the “Beltway Sniper” impacted the test scores of children in schools near the locations of the shootings but that the effect dissipated after one year.³¹ Even more “every day” stress due to poor economic conditions and higher risk of

parental job loss is shown by Golberstein, Gilbert Gonzales, and Meara to have negative effects on children’s mental health.³²

Environmental Policy

Pollution from toxic chemicals like lead can also have important long-term effects on children’s health. The combination of large administrative datasets measuring both pollution levels and health outcomes, and environmental policies that have greatly reduced pollution exposures, have allowed us to better identify the harmful effects of exposures. Karen Clay, Joshua Lewis, and Edson Severnini show that emissions from coal-fired electricity generation plants were responsible for 3,500 infant deaths per year in the early 1960s.³³ Currie and Reed Walker find that the implementation of E-ZPass improved birth out-

Falling Pollution at Toll Plazas Reduced Premature Births in Nearby Areas

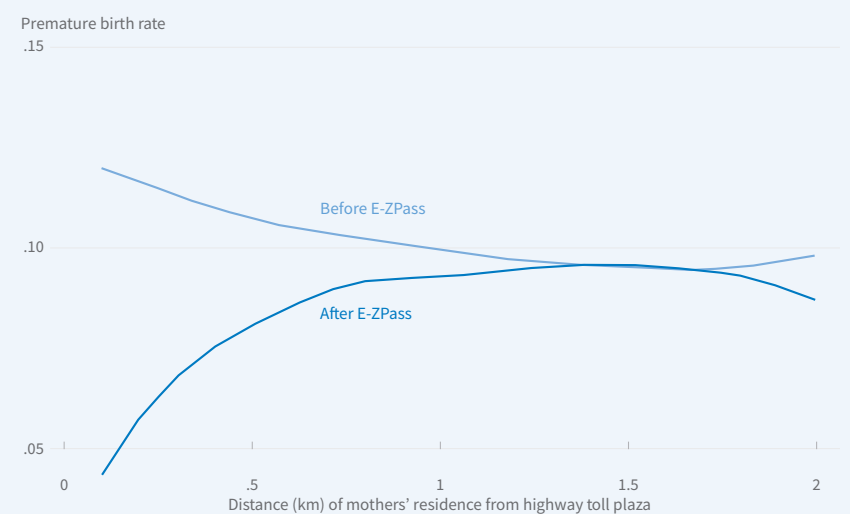


Figure 4

comes in the neighborhood of highway toll plazas by reducing pollution from automobiles [Figure 4].³⁴ Adam Isen, Rossin-Slater, and Walker follow children born in counties that were required to reduce air pollution because of the 1970 Clean Air Act. They find that lower pollution levels in the year of birth are associated with higher employment levels and higher earnings at age 30.³⁵ Aizer, Currie, Peter Simon, and Patrick Vivier document the tremendously positive effects of measures to reduce lead exposure by targeting old lead paint in Rhode Island. They show that in areas that implemented a “lead safe” certificate program, preschool blood lead levels declined rapidly and children’s later test scores improved.³⁶ This study builds on previous work by Jessica Reyes showing that cohorts of young children who benefited from the elimination of lead in gasoline when they were young had lower levels of behavior problems, aggression, and delinquency as adolescents and less crime as young adults.³⁷ Currie, Lucas Davis, Michael Greenstone, and Walker find that manufacturing plants that emitted toxic pollutants reduced infant health within a one-mile radius.³⁸ Currie, Greenstone, and Enrico Moretti find that Superfund hazardous waste site cleanups

improved birth outcomes among infants born to mothers who lived nearby compared to mothers who lived a little further away.³⁹ Claudia Persico, Figlio, and Roth show that children prenatally exposed to Superfund sites are more likely to repeat a grade or be suspended from school and have lower test scores than their own younger siblings who benefited from later cleanups of these sites.⁴⁰

Additional Immediate or Short-Term Impacts of Policy on Children

In addition to tracking long-term effects, researchers in the Program on Children continue to study the immediate impacts of a wide variety of policies affecting children and their families. These include cash transfer programs, preschool enrichment, and nutrition programs. Hoynes, Douglas Miller, and David Simon show that expansions of the EITC reduced the incidence of low birth weight and that the impact was greatest for African-American mothers [Figure 5].⁴¹ In keeping with the finding of heterogeneous program effects, Marianne Bitler, Hoynes, and Thurston Domina estimate quantile treatment effect models of the Head Start preschool program for disadvantaged children and find the largest and most persistent effects on the most disadvantaged children.⁴² This is consistent with work by Kline and Chris Walters showing that the impact of Head Start is greatest for those children without access to any other preschool programming.⁴³

Sara Markowitz, Kathleen Adams, Patricia Dietz, Viji Kanna, and Van Tong study state increases in cigarette taxes and bans on indoor smoking and show that both policies reduced the rate of premature births.⁴⁴ Aizer and Stroud show that the initial Surgeon General’s report about the dangers of smoking had a much greater

Expansion of EITC Reduced Probability of Low Birth Weight

Changes after 1993 tax reform, two-child vs. one-child EITC

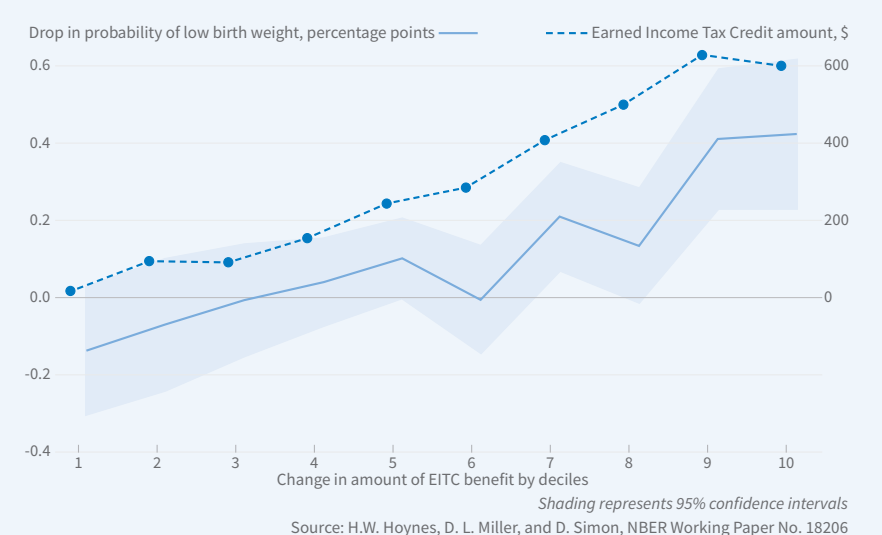


Figure 5

impact on smoking among more-educated women, so that initially the gap in smoking rates grew.⁴⁵

Schanzenbach and Mary Zaki focus on an expansion in the School Breakfast Program and find some evidence of improvements in health and behavior in some subgroups, though not overall.⁴⁶ Hoynes, Marianne Page, and Ann Huff Stevens focus on the initial roll out of the Supplemental Nutrition for Women, Infants and Children (WIC) Program across U.S. counties and show that it had positive effects on infant health and no evidence that these effects are driven by differences in fertility.⁴⁷ Currie and Ishita Rajani examine WIC in New York City and find that even comparing siblings born full term, WIC reduces low birth weight.⁴⁸ John Cawley, David Frisvold, and Chad Meyerhoefer examine state physical education mandates and find that they lower body mass index and reduce the probability of obesity among fifth graders, especially boys.⁴⁹ Conversely, Patricia Anderson, Kristin Butcher, and Schanzenbach find that schools cut back on physical education in response to “No Child Left Behind” and that this increased the fraction of children who were overweight.⁵⁰

Fertility and Parental Behaviors

Parental choices, beginning with the choice to have a child or not and under what circumstances, shape every aspect of a child’s life. One of the most important demographic changes of the late 20th and early 21st centuries has been the increase in the rate of non-marital childbearing. Not only has the overall rate increased, but Shelly Lundberg, Robert Pollak, and Jenna Stearns document a widening divide between parents with college education and those without in terms of whether they will marry and remain married.⁵¹ They argue that college educated parents marry in order to facilitate the increasingly intense investments that they will jointly make in their children. Matthias Doepke and Fabian Kindermann instead emphasize conflict between parents. They present cross-country evidence from 19 nations suggesting that fertility is lower in countries where women bear more of the child care burden.⁵² Lisa Detting and Melissa Kearney show that increases in housing prices encourage child bearing among homeowners but discourage it among renters, highlighting the importance of economic factors in fertility decisions.⁵³

Martha Bailey provides a history of the impact of the introduction of federally funded family planning programs for 1964 to 1973 on fertility, linking them to both delays in childbearing and decreases in the number of children per woman.⁵⁴ Michael Lovenheim, Randall Reback, and Leigh Wedenoja focus on teens and show that school-based health centers can lower teen fertility, especially among younger teens and African Americans.⁵⁵ Kasey Buckles and Daniel Hungerman show that a condom distribution program is also effective, lowering teen fertility

by about 10 percent.⁵⁶ Jason Lindo and Analisa Packham show that a policy providing long-acting reversible contraceptives to teenagers reduced the teen birth rate by five percent.⁵⁷ While not a policy per se, the violence inflicted on abortion providers in many parts of the country has had the opposite effect, according to Mireille Jacobson and Heather Royer, increasing fertility by making it more difficult to terminate a pregnancy.⁵⁸ Two studies by Kearney and Phillip Levine indicate, however, that much of the decline in teen childbearing since 1981 appears due to “demand” factors: Both lower teen employment rates and TV shows depicting the realities of teen motherhood have had large effects on teen birth rates.⁵⁹

Fertility decisions can have a direct impact on the parental resources available for children, as Chinhui Juhn, Yona Rubinstein, and Andrew Zuppann emphasize in their re-examination of the so-called child quantity-quality tradeoff.⁶⁰ Black, Devereux, and Salvanes find evidence of complicated patterns of parental investment by birth order, showing for example, that mothers are more likely to be smokers when their first children are born but also are more likely to breast feed those children.⁶¹ Marianne Bertrand and Jessica Pan focus on father presence as an important input, showing that boys in “broken” families are more likely to have deficits in non-cognitive skills [Figure 6].⁶² On the other hand, Lindo, Jessamyn Schaller, and Benjamin Hansen show that higher male unemployment rates predict increases in child abuse and neglect at the county level,⁶³ while Page, Schaller, and Simon find that better maternal employment prospects are associated with worse child health.⁶⁴ Consistent with this latter finding, Chris Herbst and Tekin find that higher child care subsidies are associated with greater risk of childhood obesity, perhaps through encouraging the use of non-parental care. Parental behaviors may also be implicated in the higher infant mortality rates seen in the U.S. compared to European countries.⁶⁵ Alice Chen, Emily Oster, and Williams show that the while some of the higher death rate is attributable to poorer health at birth, much of the gap opens up after the first month of life, pointing to conditions in the home as a probable cause.⁶⁶

Several studies examine ways in which policy can impact parents’ investments in children. Alexander Gelber and Isen find that parents who were randomized to Head Start in the Head Start Impact Study invest more in their children subsequently, suggesting either that parents view their own inputs as complementary to preschool or that they learned something from Head Start about how to parent.⁶⁷ Aizer and Flavio Cunha examine the introduction of the Head Start preschool program, arguing that parents tend to reinforce differences between their children and showing that parents are more likely to invest in children in a way that reinforces differences between children in larger families.⁶⁸ Roland Fryer, Steven Levitt, and John List find

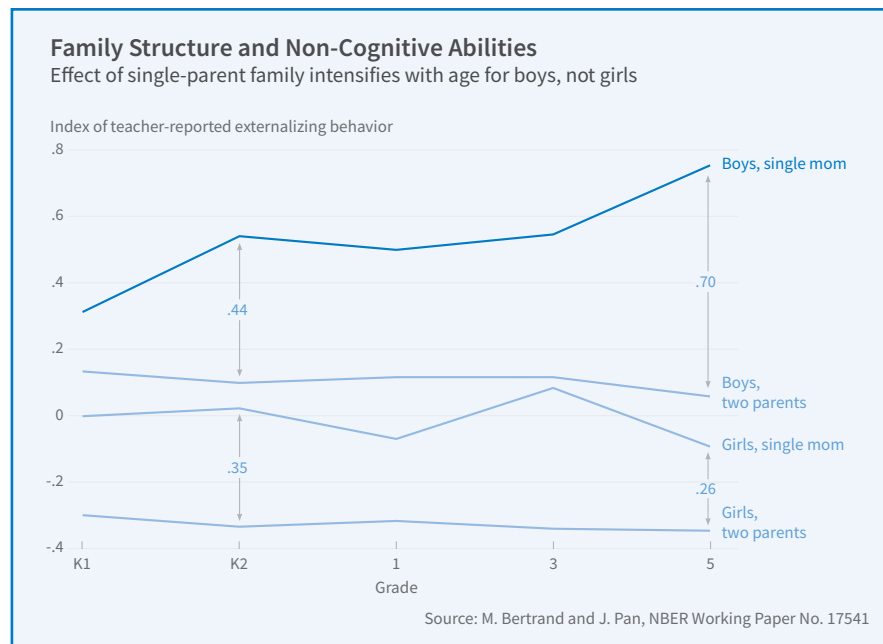


Figure 6

that providing mothers with incentives to engage their children in behaviors known to improve child development is very effective in increasing cognitive achievement in some families, but not others.⁶⁹ Rossin-Slater and Mariam Wust examine child support enforcement in Denmark and find that higher paternal obligations raise payments but that these gains are partially offset by various behavioral responses.⁷⁰ In an innovative study, Ariel

Kalil, Philip Oreopoulos, and Sebastian Gallegos conduct a field experiment designed to increase the time parents spent reading to their children, using behavioral tools such as text reminders, goal setting, and social rewards; they find large positive effects relative to simply providing information about the importance of reading to children.⁷¹

Research Focusing on Adolescents

Much about adolescents is predictive of their incipient adult outcomes. It is during adolescence that many risky or antisocial behaviors emerge or increase in frequency and severity, often with long term consequences. Miguel Sarzosa and Sergio Urzua estimate significant long term costs associated with being bullied in one’s youth.⁷² Aizer and Doyle point out that 130,000 juveniles are detained each year. Using randomly assigned judges with different propensities to incarcerate, they find that incarceration

in adolescence greatly increases the probability of incarceration in adulthood.⁷³ The importance of mental health is highlighted by Anderson, Cesur, and Tekin who show using school and sibling fixed effects models that adolescent depression predicts future property crime.⁷⁴ Fletcher finds further that adolescent depression predicts lower employment probabilities later in life.⁷⁵

While much of the previous work examining the impact of programs or policies that aim to curb risky behaviors among adolescents has not found them to be particularly effective, more recent work suggests that innovative programs can be effective.⁷⁶ For example, among youths who are involved with the justice system but not incarcerated, Alison Cuellar and Dhaval Dave find that intensive mental health treatments can help to keep youth in school.⁷⁷ In contrast, adolescent behavior seems to be less responsive to prices and sanctions. Anderson, Hansen, and Daniel Rees examine the impact of medical marijuana laws and find little impact of these laws on teen smoking.⁷⁸ Likewise, Hansen, Joseph Sabia, and Rees argue that the impact of cigarette taxes on youth smoking has declined over time.⁷⁹

The close links between mental health, what economists often call non-cognitive skills, cognitive skills, and outcomes are emphasized by two studies reporting on randomized interventions of innovative programs among youth in Chicago. Philip Cook, Kenneth Dodge, George Farkas, Fryer, Jonathan Guryan, Ludwig, Mayer, Harold Pollack, and Laurence Steinbert discuss an intervention designed to improve school performance by combining coaching on social-cognitive skills with personalized academic remediation. While the sample was small and it is not known if the program is scalable, the program had dramatic effects at modest cost.⁸⁰ Sara Heller, Anuj Shah, Guryan, Ludwig, Sendhil Mullainathan, and Pollack discuss three randomized controlled trials aimed at reducing violence and arrests and improving school engagement. These interventions, which emphasized teaching youth to slow down before acting on first thoughts and automatic behaviors, suggest that it may be possible to intervene effectively with adolescents, as well as with pregnant women and young children, to improve child outcomes.⁸¹

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