

The New York Times | <https://www.nytimes.com/2022/01/24/us/politics/child-tax-credit-brain-function.html>

Cash Aid to Poor Mothers Increases Brain Activity in Babies, Study Finds

The research could have policy implications as President Biden pushes to revive his proposal to expand the child tax credit.



By Jason DeParle

Jan. 24, 2022

WASHINGTON — A study that provided poor mothers with cash stipends for the first year of their children’s lives appears to have changed the babies’ brain activity in ways associated with stronger cognitive development, a finding with potential implications for safety net policy.

The differences were modest — researchers likened them in statistical magnitude to moving to the 75th position in a line of 100 from the 81st — and it remains to be seen if changes in brain patterns will translate to higher skills, as other research offers reason to expect.

Still, evidence that a single year of subsidies could alter something as profound as brain functioning highlights the role that money may play in child development and comes as President Biden is pushing for a much larger program of subsidies for families with children.

“This is a big scientific finding,” said Martha J. Farah, a neuroscientist at the University of Pennsylvania, who conducted a review of the study for the Proceedings of the National Academy of Sciences, where it was published on Monday. “It’s proof that just giving the families more money, even a modest amount of more money, leads to better brain development.”

The payments will continue until the children are at least 4 years old, and the researchers plan further tests.

via Lauren Meyer/Baby's First Years

Another researcher, Charles A. Nelson III of Harvard, reacted more cautiously, noting the full effect of the payments — \$333 a month — would not be clear until the children took cognitive tests. While the brain patterns documented in the study are often associated with higher cognitive skills, he said, that is not always the case.

“It’s potentially a groundbreaking study,” said Dr. Nelson, who served as a consultant to the study. “If I was a policymaker, I’d pay attention to this, but it would be premature of me to pass a bill that gives every family \$300 a month.”

A temporary federal program of near-universal children’s subsidies — up to \$300 a month per child through an expanded child tax credit — expired this month after Mr. Biden failed to unite Democrats behind a large social policy bill that would have extended it. Most Republicans oppose the monthly grants, citing the cost and warning that unconditional aid, which they describe as welfare, discourages parents from working.

Sharing some of those concerns, Senator Joe Manchin III, Democrat of West Virginia, effectively blocked the Biden plan, though he has suggested that he might support payments limited to families of modest means and those with jobs. The payments in the research project, called Baby’s First Years, were provided regardless of whether the parents worked.

Evidence abounds that poor children on average start school with weaker cognitive skills, and neuroscientists have shown that the differences extend to brain structure and function. But it has not been clear if those differences come directly from the shortage of money or from related factors like parental education or neighborhood influences.

The study released on Monday offers evidence that poverty itself holds children back from their earliest moments.

“This is the first study to show that money, in and of itself, has a causal impact on brain development,” said Dr. Kimberly G. Noble, a physician and neuroscientist at Teachers College, Columbia University, who helped lead the study.

Dr. Noble and colleagues from six universities recruited a thousand mother-infant pairs within days of the babies’ birth and randomly divided the families into two groups. One group received a nominal \$20 a month and another received \$333.

Using electroencephalograms, or EEG tests, to evaluate the children at age 1, the researchers found that those in the high-cash group had more of the fast brain activity other research has linked to cognitive development than those in the low-cash group. The differences were statistically significant by most, but not all, measures and were greatest in parts of the brain most associated with cognitive advancement.

The payments will continue until the children are at least 4 years old, and the researchers plan further tests.

Researchers are still trying to determine why the money altered brain development. It could have purchased better food or health care; reduced damaging levels of parental stress; or allowed mothers to work less and spend more time with their infants.

The question of whether cash aid helps or hurts children is central to social policy. Progressives argue that poor children need an income floor, citing research that shows even brief periods of childhood poverty can lead to lower adult earnings and worse health. Conservatives say unconditional payments erode work and marriage, increasing poverty in the long run.

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President Bill Clinton changed the Democratic Party’s stance a quarter-century ago by abolishing welfare guarantees and shifting aid toward parents who work. Though child poverty subsequently fell to record lows, the reasons are in dispute, and rising inequality and volatility have revived Democratic support for subsidies.

There are a variety of public and private programs underway in the United States to measure the effects of a guaranteed income on poor families, and many other rich countries offer broad children's allowances without condition.

The temporary expansion of the child tax credit, passed last year, offered subsidies to all but the richest parents at a one-year cost of more than \$100 billion. Representative Suzan DelBene, Democrat of Washington, said the study strengthened the case for the aid by showing that "investing in our children has incredible long-term benefits."

Greg J. Duncan, an economist at the University of California, Irvine, who was one of nine co-authors of the study, said he hoped the research would refocus the debate, which he said was "almost always about the risks that parents might work less or use the money frivolously" toward the question of "whether the payments are good for kids."

But a conservative welfare critic, Robert Rector of the Heritage Foundation, argued that the study vindicated stringent welfare laws, which he credited with reducing child poverty by incentivizing parents to find and keep jobs.

"If you actually believe that child poverty has these negative effects, then you should not be trying to restore unconditional cash aid," he said. "You certainly don't want to go in the business of reversing welfare reform."

Economists and psychologists once dominated studies of poor children, but neuroscientists have increasingly weighed in. Over the past 15 years, they have shown that poor children on average differ from others in brain structure and function, with the disparities greatest for the poorest children.

EEG tests have found differences in electrical activity. Magnetic resonance imaging, or M.R.I.s, have shown differences in the size of the cerebral cortex, especially in areas linked to language development and executive functioning. One study found differences in cerebral cortex size may account for up to 44 percent of the achievement gap between high- and low-income adolescents.

As with any group differences, averages do not predict individual outcomes. Many other factors beyond brain features influence cognitive development, and many low-income children thrive.

To test the effects of cash aid, Baby's First Years raised more than \$20 million from public and private sources, including the National Institutes of Health. Researchers recruited participants from maternity wards in New York City, Minneapolis-St. Paul and the metro areas of New Orleans and Omaha, randomly assigning them to the high- and low-payment groups.

The families had average incomes of about \$20,000, below the official poverty line for an average-sized family, meaning those who received \$333 a month experienced an income gain of approximately 20 percent. The mothers were told they could use the money as they wished.

The researchers predicted that children in the high-cash group would show more high-frequency brain activity than those in the low-cash group and less low-frequency activity. Previous research has found such patterns are associated with higher cognitive skills and fewer attention problems.

The results largely conformed to predictions, with the children who received the higher grants showing more of the fast brain activity (though no differences in slow brain activity).

The scientists wrote that the money "appeared" to cause the changed brain patterns, though they were less equivocal in interviews. Dr. Noble said the evidence, though strong, was not "airtight," in part because the coronavirus pandemic allowed them to test only 435 infants.

Researchers are still trying to determine why the money altered brain development. It could have purchased better food or health care. Cody O'Loughlin for The New York Times

John Gabrieli, a neuroscientist at the Massachusetts Institute of Technology, said the evidence that cash aid altered brain activity was persuasive and “very important scientifically,” though he added, “We want to see if these differences result in improvements to cognition.”

While the size of the recorded differences are modest (about a fifth of a standard deviation), the researchers said they were comparable to those produced by the average school experiment, like giving children tutors. While those services are often hard to administer, they added, cash can be distributed on a mass scale.

Katherine Magnuson, a co-author of the study who directs the Institute for Research on Poverty at the University of Wisconsin, said she was surprised that only a year’s worth of aid made a difference. “It shows how sensitive the brain is to environments,” she said.

Critics of unrestricted cash aid often warn that families will waste or abuse it. But Lisa A. Gennetian, an economist at Duke University and a co-author of the study, said the results indicated that parents could be trusted to make good decisions. “For one family, that might be food; for another, it might be housing,” she said. Additional research will examine how parents spent the money.

Unlike last year’s expansion of the child tax credit, the experimental payments were narrowly targeted to poor newborns, which would make it less costly to replicate and possibly ease conservatives’ concerns about deterring work.

One critic of the broader payments, Angela Rachidi of the American Enterprise Institute, said the study suggested the importance of infant bonding. Should the initial results hold up, she said, they could lend support for policies that help mothers spend more time with their newborns, including paid leave.

But any cash aid, she said, should be “targeted to those with low incomes, time limited, and not erode work incentives in the long term.”