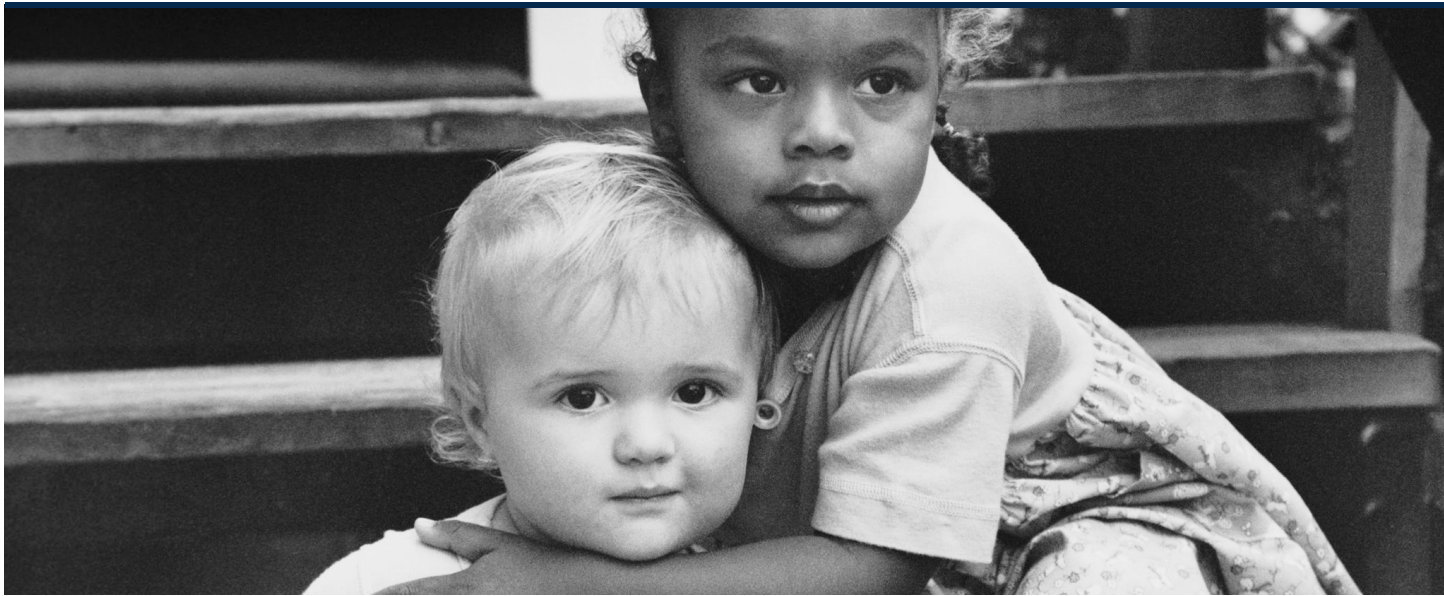


What Matters Most for Children: Influencing Inequality at the Start of Life



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Why Early Childhood Deserves Attention

The persistence of gaps in education, income, health and a long list of other socio-economic indicators suggests there is an urgent need to reduce inequality early in life. The potential early remedies of childhood education and care encompass the various community and educational settings that provide services to ensure the well-being of young children from birth to age 8. The preschool years (ages 3 to 5) and transitions to formal elementary school (ages 6 to 8) have commanded considerable research and policy attention in the early childhood field. However, much less has been learned or done about the critical early years from birth to age 3 despite scientific consensus that the experiences in the first three years of life are critical for supporting children's optimal development. What happens in these early childhood years can matter for a lifetime.

This paper provides an overview of the science of early childhood and summarizes the disparities and the opportunity gaps stemming from inequalities. It also describes categories of programs, services and policies for children birth to age 3 that might affect the extent of inequality and provide supportive early life experiences.

The Science of Early Childhood

Science shows us what children must have, and what they need to be protected from, to promote their healthy development. Stable, responsive, nurturing relationships and rich learning experiences in the earliest years provide lifelong benefits for learning, behavior and both physical and mental health (National Scientific Council on the Developing Child, 2004). Neuroscientists have found that the birth-to-5 age range is a sensitive period of human development when synaptic connections are most primed to create networks to facilitate children's learning and development (Shonkoff & Phillips, 2000). The brain's architecture is built over time, starting prenatally and continuing until adulthood; positive, supportive experiences undergird the development of a strong foundation (National Scientific Council on the Developing Child, 2007). However, lack of access to basic supports and negative experiences can lead to a more fragile foundation with consequences for subsequent development (National Scientific Council on the Developing Child, 2004, 2007). Unfortunately, not all children have equal chances to experience supportive interactions and enriching environments, especially those in poverty, of color, and at risk because of other social and familial challenges.

Disparities at the Start of Life

Research indicates that disparities stemming from inequalities in life circumstances emerge early in life. One key dataset used in research on disparities is the Early Childhood Longitudinal Survey, Birth Cohort project (ECLS-B), which AIR led the development and management of starting in 2000 for the U.S. Department of Education's National Center for Education Statistics (NCES). Research using this dataset has found that differences in children's knowledge, development and well-being related to race and family income level become apparent well before the preschool years. Disparities in social and language development by income across a range of outcomes begin to emerge as early as 9 months of age (Halle et al., 2009). Significant

differences have been found in language among infants from disadvantaged families: Toddlers from such families are already several months behind more advantaged children in language proficiency and knowledge (Fernald, Marchman, & Weisleder, 2013; Hart & Risley, 1995), and at age 3, children from lower-income families receiving welfare will have heard approximately 30 million fewer words than children from families of higher socio-economic status (Hart & Risley, 1995). Research findings suggest that early language and interaction experiences have lasting effects on a child's performance later in life (Hart & Risley, 1995 and 2003; Huttenlocher, Waterfall, Vasilyeva, Vevea, & Hedges, 2010). For example, on longitudinal follow-up, the children from higher socio-economic status families had larger vocabularies, were stronger readers and earned better test scores compared to the children from low-income families (Hart & Risley, 2003).

These circumstances stem from the opportunity gap often experienced by poor, ethnic minority children (particularly black and Hispanic children) and their families. A range of social, educational and health indicators are often used to illustrate the opportunity gap and disparities based on income, race and ethnicity. Such indicators as preterm births, infant mortality, school expulsion, school suspension, incarceration, college attainment, depression and a long list of other economic, social and health metrics often suggest that black and poor families fare worse than white and higher-income families (see Appendix Table A-1).

These social, economic and health indicators may suggest that children are in environments with ongoing stress and toxic stress. Toxic stress is defined as frequent or prolonged adversity stemming from economic hardship, abuse, neglect, caregiver mental health and other difficult circumstances without the presence of supportive adults to buffer the stress. Studies have shown that toxic stress has a significant negative impact on brain development, especially during the early sensitive periods in the first three years of life. For example, children living in poverty and children who are neglected or abused exhibit elevated stress hormone levels that have negative consequences on brain development and later developmental outcomes (National Scientific Council on the Developing Child, 2014). The hardships of poverty on material and psychosocial well-being are significant, and their effects on early development are often severe (Blair & Raver, 2012). Individuals, families and communities that have systematically experienced such socio-economic disparities and ongoing stressful life situations face greater obstacles to achieving and maintaining optimal outcomes at all phases of human development.

Is there a prescription for closing these gaps? Not exactly, but for optimal development, children need safe and healthy environments, sensitive and responsive caregivers, opportunities to develop oral language and communication skills, support for social-emotional development (including self-regulation), cognitively enriching experiences and positive and respectful guidance—at home and in the community (Shonkoff & Phillips, 2000; Snow & Van Hemel, 2008). Although there is some evidence that small-scale, one-on-one interventions enriching the home environment can help narrow these disparities (i.e., Suskind et al., 2013b), the best approach to achieving a large-scale, sustainable impact remains unknown.

Waiting until preschool to intervene may be too late to close known gaps in children's development and in supporting parents caring for vulnerable infants and toddlers. Without high-quality early childhood education and care services from the start of human life, children

experiencing poverty or other negative circumstances early in life are more likely to drop out of high school, experience chronic and long-term unemployment and become involved in the criminal justice system (Wagmiller & Adelman, 2009).

What Is Available and What Works?

Which U.S. programs and policies aimed at helping the least privileged infants and toddlers thrive are available? Which work best for whom and when? These are profoundly complicated questions, and there have been few rigorous evaluations of birth-to-age-3 programs. The early childhood education research field domestically and internationally has significantly more to say about what works for children age 4 and older despite the known importance of the early years. Nevertheless, four categories of U.S. programs, services and policies for children birth to age 3 could potentially affect the extent of inequality and provide supportive early life experiences: (1) early childhood education and care programs; (2) home visitation and parent support programs; (3) family income and support programs; and (4) pediatric screeners, child abuse prevention and early intervention programs. (See Appendix B for a brief description of the research evidence.)

Early Childhood Education and Care Programs. Programs for infants and toddlers (birth to age 3) have received national recognition for their objective of improving child developmental outcomes. But the evidence on early childhood education and care programs focused on this younger age group is mixed and plagued with study design issues. Overall, research evidence primarily suggests positive impacts on outcomes for some infant and toddler programs such as Early Head Start and the Infant Health and Development Program. The positive research findings, however, are often called into question because of weak study design, small or restricted samples and the general need for more studies that are current, longitudinal and rigorous. Some such studies have a small sample that may not be generalizable today (e.g., the Carolina Abecedarian Project) or lack rigorous research evidence (e.g., the Harlem Children's Zone® Baby College Program and Quality Rating and Improvement Systems studies. Appendix Table B-1 describes these programs.)

Home Visitation and Parent Support Programs. Typically, these programs provide targeted support to families, particularly concerning health issues for mothers and their children prenatally to age 3. The research base of programs reviewed under this category varies. Reviews of the programs show evidence that suggests a positive impact on the outcomes of children and families, but more large-scale, rigorous, nationally represented studies are needed. The programs reviewed here have a research base that yields positive but inconsistent findings (e.g., the Nurse-Family Partnership Program); limits generalizability of findings (e.g., Healthy Families America); or lacks rigor (e.g., Healthy Start). Appendix Table B-2 describes these programs.

Family Income and Support Programs. These programs specifically target the care of infants and toddlers by supporting their parents through nutrition resources (e.g., the Special Supplemental Nutrition Program for Women, Infants, and Children — WIC), child-care support (e.g., subsidies), cash-transfer policies (e.g., the Earned Income Tax Credit — EITC) and work leave policies (e.g., Family and Medical Leave Act — FMLA). Of the four types of programs in this category, FMLA and

EITC are not reviewed here for research design or limitations. The research base of WIC and child-care subsidy programs reflects both longitudinal and descriptive research design using large-scale datasets. Although the literature reviewed emphasized the positive effects of these two programs types on children's outcomes, some of the research study designs were weak and lacked rigor. No nationally representative or large-scale studies exist for child-care subsidy programs in particular. However, there is an evidence base for the positive impact of EITC on child and family outcomes. (Appendix Table B-3 describes these programs.)

Pediatric Screeners, Child Abuse Prevention and Early Intervention Services. These programs aim to provide early intervention, pediatric support and child abuse/trauma prevention to young children. For the pediatric screener and early intervention initiatives, there was more theory and less strong empirical evidence on their inequality-related effects on child outcomes. However, some programmatic interventions in the child abuse prevention and child welfare fields show promise in providing a positive, supportive environment to mitigate the effects of toxic stress and do support positive development in young foster children (e.g., Dozier & Fisher, 2014; Dozier, Zeanah, Wallin, & Shauffer, in press. Appendix Table B-4 describes these programs.)

In summary, evidence on the effectiveness of policies and programs aimed specifically at children birth to 3 years old is mixed. Overall, research evidence primarily suggests positive effects on outcomes in early childhood. However, weak study design, small or restricted samples, and too few longitudinal studies rigorous enough to offset positive findings continue to challenge consensus about which kinds of policies and programs matter for whom, by outcome.

A Global Perspective. For good reason, early childhood is an increasingly important focal area for international development agencies. Of every 1,000 children born in the world, more than 100 die before their fifth birthday, compared with fewer than 10 in higher-income countries (U.N. Millennium Project, 2005). Research shows that delays in cognitive development during the early years of life impede subsequent educational success, even when international aid agencies invest heavily in primary and secondary education. Inequality from a global perspective is often framed in terms of child rights. Definitions focused on children's "unequal life chances" inform such commonly used indicators as health, hunger, education and child labor (Giddens & Sutton, 2013). The United Nation's (1989) *Convention on the Rights of the Child*, the most referenced document and set of standards for child rights, is based on four quality-of-life and health domains: child survival, safety, belonging and development. Relatively inexpensive interventions related to providing nutrition and early stimulation supports have shown considerable promise in rigorous trials in low- and middle-income countries.

What to Promote, Generate, Develop or Evaluate

Reducing early childhood inequality requires both promoting existing knowledge and generating new knowledge.

Promoting the Knowledge We Have

To accelerate evidence-driven change, a cohesive picture of what is known about inequality's causes at the start of life is essential. Understanding potential inequalities in the development, education and care of children from birth to age 3 requires a broad spectrum of data on the developing child and the child's multiple learning contexts. Such large databases as the Early Childhood Longitudinal Study, Birth Cohort (ECLS-B) and numerous other national and specialized datasets are available to help us better understand inequality issues and the relationships between inputs and outcomes. But we can't expect to reduce inequality's consequences without a stronger organizing framework for learning from these rich data sources. For example, a compendium consolidating the datasets and major research on infants and toddlers could advance the research evidence on the causes and consequences of inequality in early childhood. (Potential datasets are listed in Appendix C.)

Although there is more to know and understand about the causes of early childhood inequality and what we can do about this issue, the evidence at hand enables the development of strategies to support children's life opportunities immediately. We have strong empirical evidence about the importance of quality education and environments, stimulating and stable settings and supportive relationships for the positive development and well-being of children. The negative implications of adverse experiences on children's development and life chances are also known, as are some promising approaches to reducing their impact. Existing knowledge about what works and what is important for supporting children's early development could be used to create evidenced-based *research-to-practice pathways*.

Internationally, local resource constraints often impede the universal implementation of even modest interventions in developing countries. Possible remedies include technical assistance to international agencies to improve early intervention services for children from birth to age 3. One place to start is improving early intervention services for children in countries where parents often hide their children with disabilities for fear of stigmatization, and children with disabilities are typically institutionalized without appropriate stimulation and social-emotional support. More generally, evidenced-based best practices for providing supportive early intervention services and strategies could lead to system-wide reforms, especially if shared in partnership with international aid agencies, to move from the more traditional "medical" model, in which babies are removed from their families and communities, to a "social model," in which babies remain with their families and families get appropriate early intervention supports. Finally, more evaluations of low-cost early childhood interventions to supplement government investments and programs should be a high priority for agencies already running or sponsoring these services.

Generate New Knowledge

Documenting gaps in our knowledge about what matters and what works for children from birth to age 3 can inform decisions about where to direct resources. There is considerably more information about and attention paid to the critical aspects of early education and care for preschool-age and older children. Much less is known about many important components of quality environments for infants and toddlers. Quality environments are composed of multiple components, including the experience of caregivers, caregiver wages and stress, child-level interactions, time in care, consistency of care, parental engagement and environment. Also, knowledge gaps keep us from knowing whether the disadvantaged populations most in need are accessing the “right” quality components and dosage that will result in the biggest difference for infants and toddlers. One way to expand the research base on reducing disparities and ameliorating inequality in early childhood is to unpack the components of early childhood quality to learn more about which (as inputs or moderators) matter most in the developmental and life outcomes of infants and toddlers.

The impact of the growth of publicly funded preschool services on infant/toddler programs also deserves attention. Shifting the political discourse from providing publicly funded services for children beginning at age 4 to children between birth and age 3 has been difficult. The current focus on meeting the needs of preschool-aged children versus those from birth to age 3 (Kirp, 2007) may continue, given the tangible differences in the requirements, costs and resources of early childhood education and care for infant/toddlers versus those for preschoolers. Quite simply, caring for infants/toddlers is expensive. In many child-care programs, fees from the preschool programs supplement the high costs of infant and toddler care in the same program. If more preschool services are publicly funded, the costs and quality of infant and toddler care may be affected. Little is known about possible effects on program quality and affordability.

Gaps in the knowledge base on the costs and benefits of investing in infant and toddler programs also need to be closed. Many recent successes in pushing through universal preschool policies are based on economics research showing the return on investments in preschool education (Heckman, 2008; Knudsen, Heckman, Cameron, & Shonkoff, 2006), but scant attention has been paid to measuring the return on investment for programs that serve children from birth to age 3 (one exception is research on the Carolina Abecedarian Project). Evidence about the comparative effectiveness of infant and toddler and preschool programs for children from families at different income levels is scarce (Duncan & Sojourner, 2013). That said, one recent meta-analysis found larger effects by infant-toddler programs compared to preschool programs on child outcomes (Leak et al., 2014). If investments in the younger childhood years perform better than, say, those in preschool, federal and state policy may broaden further, beyond the rolling out of universal preschool, to include more strategies for children birth to age 3 and their families.

Developing and testing promising policy and programmatic strategies that could alleviate the reproduction of inequality and deepen positive impact across multiple generations of disadvantaged populations should be another priority for researchers and policymakers. What is known about the effects of many of the potentially “equalizing” policy programs summarized earlier in this paper (e.g., family paid-leave, child-care subsidies, EITC and QRIS) on reducing

early childhood inequality is sparse. Little is known about the effectiveness of multiple policies on closing the opportunity gap for infants and toddlers and their families. Systematically evaluating the impact of U.S. family paid-leave policies on child/family outcomes holds promise: Such a study could apply rigorous designs and cross-state variation in family leave policy across several states to examine the links among policy, leave-taking behavior and child/family outcomes. No such research has been conducted in the United States to date.

Similarly, we know little about whether Quality Rating Improvement Systems (QRIS) actually help increase access to high-quality child care by low-income and minority families. Many economically disadvantaged children are cared for in early childhood education programs that are under-resourced and staffed by caregivers who are themselves economically and socially disadvantaged (i.e., low-education and low-wage workers) and live in the same communities. Developing and testing a professional development program for such teachers that includes coaching and a living wage is another area ripe for intervention.

Replicating key early childhood experimental research projects could also yield game-changing evidence. There is renewed interest in the research and practice community to implement two-generation strategies that improve both parent and child outcomes (Shonkoff & Fisher, 2013). Improving on related research done decades ago, which provides little empirical evidence to guide the two-generation strategies most likely to improve well-being and positive outcomes (Chase-Lansdale & Brooks-Gunn, 2015), makes excellent sense. For instance, the Carolina Abecedarian Project, conducted 43 years ago, used a randomized controlled trial (RCT) evaluation design with a 30-year follow-up. Because the project was so comprehensive and so high quality and because the follow-up studies followed participating children into adulthood, replicating it would be costly but worthwhile, especially if it took account of the much wider range of early childhood service offerings available now. One analysis suggests that an Abecedarian-like intervention replicated today would eliminate income-based gaps in cognitive and school readiness outcomes (Duncan & Sojourner, 2013).

A pronounced need is to increase efforts to develop scalable and effective early childhood programs for infants and toddlers (Leak, 2013; Suskind, 2013a). That could include adopting a multigenerational neighborhood or community within a single city, employing multigenerational interventions targeted to youth's high school or college transitions (teens and young adults between the ages of 15 and 25, who are often the parents of young children in disadvantaged populations) and grandparents or elders (adults ages 45 and up, who are often the parents of youth in disadvantaged populations). The adults in the lives of young children are also the ones with the power to buffer the negative impact of inequality and related stressors, creating a foundation of resilience on which positive outcomes can be built.

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Appendix A. Indicators of Racial and Economic Disparities

Table A-1. Selected Indicators of Racial and Economic Disparities in the United States

Indicators	Racial and Economic Disparities
Poverty Rate by Household Composition With Children Younger Than 18	The poverty rate for mother-only households was 46 percent. For father-only households, it was 27 percent. For married-couple households, it was 11 percent. ^a
Preterm Births	The percentage of preterm births for all racial and ethnic groups in the United States is higher than in other developed countries. The highest rate in the United States is among black women. ^b
Infant Mortality	The rate of infant mortality is 2.2 times greater for the black population than for the white population. ^c
Preschool Expulsion	The rate for black 4-year-old children was 10 (per 1,000), compared with 4.4 percent for Hispanic children and 5.8 percent for white children. ^d
School Suspension	Black students comprised 46 percent of students who were suspended more than once. ^e
School Expulsion	Black students are three times more likely to be suspended or expelled from school than their white classmates. ^f
Dropout Rate (Ages 16 to 24)	The dropout rate is 5 percent for whites, 8 percent for blacks, and 12 percent for Hispanics. ^{g,h}
Incarceration Rate	Black children (6.7 percent) were 7 1/2 times more likely than white children (0.9 percent) to have a parent in prison, and Hispanic children (2.4 percent) were more than 2 1/2 times more likely than white children to have a parent in prison. ⁱ
Four-Year College Degree Attainment	The percentage of black students earning a four-year college degree is 20 percent, compared with 40 percent of white students and 16 percent of Hispanic students. ^j
Master's or Higher Degree Attainment	The percentage of students earning postgraduate degrees was 3 percent for black students, 3 percent for Hispanic students, and 9 percent for white students. ^j
Gender Gap	Because of higher death and incarceration rates among black men, fewer black men than women are found in the adult population. This pattern does not hold true for the white population where the numbers of adult white men and women are equal. Both black and white boys and girls are born at the same rate, but by adulthood there are fewer black men. The imbalance begins to appear among black teenagers, increases from ages 20 to 30 and peaks from ages 30 to 40. ^k

Indicators	Racial and Economic Disparities
Single-Parent Household	Fifty-five percent of black children and 31 percent of Hispanic children were more likely to live with one parent compared with 21 percent of non-Hispanic white children. ^l
Maternal Depression	Twenty-five percent of mothers who are poor with a 9-month-old infant are moderately or severely depressed compared with 11 percent of mothers who are not poor, and maternal depression disproportionately affects children in families with low income. ^m
Death Rate	In 2013, the average risk of death for the black population was 21.1 percent higher than for the white population. ^c

Table A-1 Notes

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Appendix B. Summary of Research Evidence Behind Early Childhood Policies and Programs

Table B-1. Key Early Childhood Education and Care Birth-to-Age-3 Programs

Program	Brief Description/Design	Findings
The Carolina Abecedarian Project	<ul style="list-style-type: none"> A center-based, full-day, full-year program that began in infancy and continued through entry to kindergarten. Included a systematic curriculum that emphasized the development of skills in cognition, language and adaptive behavior. In addition, children attending the child-care center received their primary pediatric care onsite. RCT design, with longitudinal study follow-up over 30 years. 	<ul style="list-style-type: none"> Effects on educational attainment, employment and other important life outcomes sustained well into adulthood.^a
Early Head Start Program	<ul style="list-style-type: none"> A comprehensive, two-generation program that focuses on enhancing children’s development while strengthening families. Designed to serve pregnant women and families with infants and toddlers up to age 3 living in low-income households, the Early Head Start program uses various strategies to provide a wide range of services. National RCT design, with longitudinal study follow-up. 	<ul style="list-style-type: none"> Enhanced cognitive and language skills, reduced aggressive behaviors, higher engagement with the parent during play, higher rates of immunizations, and impact on parent education/training.^{b c} Early impacts did not continue, not as broad at fifth grade.^{b c}
Infant Health and Development Program	<ul style="list-style-type: none"> Designed to reduce the developmental and health problems of premature low-birth-weight infants. With children between birth and age 3, program families received home visits, enrollment at a child development center, parent group meetings, service referrals and developmental assessments. National RCT design, with longitudinal study follow-up. 	<ul style="list-style-type: none"> Initial impacts on cognitive and social behavior, although effects weakened by age 5.^d Effects on mothers related to mental health, home environment and employment in later years.^{d e}
Harlem Children’s Zone® Baby College	<ul style="list-style-type: none"> HCZ’s Baby College (the only program within HCZ that is targeted to the birth-to-age-3 population) is a nine-week parenting workshop for expectant parents and those with children up to age 3. 	<ul style="list-style-type: none"> No evidence.

Program	Brief Description/Design	Findings
Quality Rating and Improvement Systems	<ul style="list-style-type: none"> ▪ QRIS rate the quality of child-care programs and provide incentives to help early education and care programs improve their quality. Another purpose of QRIS is to help improve access to child care among parents living in low-income households. ▪ No research, although several pre-post validation studies are under way. 	<ul style="list-style-type: none"> ▪ No evidence.

Table B-1 Notes

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Table B-2. Home Visitation and Parent Support Programs

Program	Brief Description/Design	Outcomes
Nurse-Family Partnership Program	<ul style="list-style-type: none"> ▪ Targets first-time mothers and their infants raised in low-income households. Trained public health registered nurses pay one-on-one visits to mothers. The nurses begin the home visits during the prenatal period at no later than the 28th week of gestation and conclude when the children turn 2 years old. ▪ RCT studies on three different populations in different parts of the country have been conducted, with follow-up research. 	<ul style="list-style-type: none"> ▪ Findings vary greatly by site but include impact on children’s cognitive development, mothers’ use of welfare and home environment.^{a b c} ▪ Consistent finding is that mothers have fewer subsequent births.
Healthy Families America	<ul style="list-style-type: none"> ▪ Home-visiting services for at-risk families begin either prenatally or immediately after the birth and are intensive over a period of three to five years after birth. ▪ Several RCT studies in various states since 1990s, with two having longitudinal follow-up. 	<ul style="list-style-type: none"> ▪ Findings vary greatly by site but include impacts on parenting, family resources, maternal health, maternal behavior, children’s cognitive development and home environment.^{d e f}
The Durham Connects/Family Connects Initiative	<ul style="list-style-type: none"> ▪ A universal nurse home-visiting program is available to all families who reside within a defined service area and who have newborns aged 2 to 12 weeks. The program aims to support families’ efforts to enhance their children’s health and well-being as well as reduce rates of child abuse and neglect. ▪ RCT and several descriptive studies. 	<ul style="list-style-type: none"> ▪ Fewer infant emergency episodes and more community connections; more positive parenting behaviors; participation in higher-quality, out-of-home child care; and lower rates of anxiety than exhibited by control mothers.^g
Even Start	<ul style="list-style-type: none"> ▪ A federal initiative that offered grants to support local family literacy projects that integrated early childhood education, adult literacy, parenting education and interactive parent-child literacy activities to parents with children from birth to age 7 raised in low-income households. ▪ RCT, with major design flaws. 	<ul style="list-style-type: none"> ▪ No impacts on child and family outcomes.
Healthy Start Initiative	<ul style="list-style-type: none"> ▪ Provides funds to local agencies to promote health education and conception care for women who are at risk for poor perinatal outcomes. ▪ Quasi-experimental longitudinal comparison, cohort studies. 	<ul style="list-style-type: none"> ▪ Inconsistent findings across studies, but some included impacts on birth weight, prenatal care and birth rates.^{h i j}

<p>Parents as Teachers</p>	<ul style="list-style-type: none"> ▪ The goal of the PAT program is to offer parents child development knowledge and parenting support, provide early detection of developmental delay and health issues, prevent child abuse and neglect and increase children’s school readiness. ▪ Multiple RCTs and descriptive studies. 	<ul style="list-style-type: none"> ▪ Inconsistent and small findings on parent knowledge.^k ▪ No impacts on children.^l
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Table B-2 Notes

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Table B-3. Family Income and Support Programs

Program	Brief Description/Design	Outcomes
Child-Care Subsidies	<ul style="list-style-type: none"> ▪ Subsidies are available to states to help families living in low-income households, families receiving public assistance and families transitioning from public assistance in obtaining child care. ▪ Multiple correlational and descriptive studies, no RCTs, although an impact evaluation is underway. 	<ul style="list-style-type: none"> ▪ Effects are mixed regarding impacts on children's, parents' and families' well-being.^{a b}
Earned Income Tax Credit	<ul style="list-style-type: none"> ▪ A cash-transfer program that provides cash payments through a refundable tax credit to poor families and individuals, with the most generous payments for families with children. ▪ Considerable literature examines the effects of the EITC and its expansion on a wide variety of economic and social outcomes on families and children using a range of research methods. However, most studies focus on labor supply of adults, less on child outcomes (and if available, mostly on older children). 	<ul style="list-style-type: none"> ▪ Effects on infant health (birth weight).
The Family and Medical Leave Act	<ul style="list-style-type: none"> ▪ FMLA entitles eligible employees of covered employers to take unpaid, job-protected leave for specified family and medical reasons, including the birth or adoption of a child, with continuation of group health insurance coverage under the same terms and conditions as if the employee had not taken leave. ▪ Descriptive studies. 	<ul style="list-style-type: none"> ▪ Effects on infant mortality.^c
Special Supplemental Nutrition Program for Women, Infants, and Children	<ul style="list-style-type: none"> ▪ WIC provides nutrient-dense foods, nutrition education and referrals to health care services for pregnant, breastfeeding and postpartum women; infants; and children up to age 5 who are living in low-income households and who are at nutritional risk. This program serves 53 percent of all infants born in the United States. ▪ Multiple correlational and descriptive studies, no RCTs. 	<ul style="list-style-type: none"> ▪ Effects on child nutritional health (iron deficiency), birth weight, infant weight and infant mortality.^d

Table B-3 Notes

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Table B-4. Pediatric Screeners, Child Abuse Prevention and Early Intervention Services

Program	Brief Description/Design	Outcomes
Safe Environment for Every Kid	<ul style="list-style-type: none"> The program trains child health primary care professionals to briefly assess and initially help address targeted psycho-social problems and provide screening for several common problems that are risk factors for child maltreatment. 	<ul style="list-style-type: none"> Impacts on rates of child abuse and neglect as well as on harsh parenting.^{a b}
Developmental Screening Tools	<ul style="list-style-type: none"> The purpose is to provide early identification of various physical, cognitive, linguistic, health, mental health and social-emotional conditions that can be addressed or ameliorated through early intervention services delivered to the child and family. 	<ul style="list-style-type: none"> No evidence on child and family outcomes related to inequality.
Early Intervention	<ul style="list-style-type: none"> Supported by the Individuals with Disabilities Education Act (IDEA), Part C Infants and Toddlers with Disabilities Program. The purpose is to enhance the development of infants and toddlers with disabilities, minimize potential developmental delay and reduce educational costs. 	<ul style="list-style-type: none"> Impacts on children and families but not directly on indicators that relate to inequality.^{c d}
Child Abuse and Trauma Prevention Programs	<ul style="list-style-type: none"> A range of approaches and programs for reducing exposures of children to maltreatment and toxic stress, including child abuse prevention programs, hospital-based programs for abuse and head trauma prevention, and community-based programs such as home visitation, parent training, family support as well as guidance and screenings for the pediatrician on approaches to prevention in well-baby visits. 	<ul style="list-style-type: none"> Impacts of different approaches and programs vary greatly. No consensus on what type of prevention program works best for whom.

Table B-4 Notes

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Table B-5. Research Rigor and Limitations for Early Childhood Categories/Levels

Program Categories/ Policy Levers	Specific Program/ Policy	Research Design	Strong Findings	Limitations of Research Base
Early Childhood Education and Care Programs	The Carolina Abecedarian Project	<ul style="list-style-type: none"> ▪ RCT with longitudinal follow-up 	YES	<ul style="list-style-type: none"> ▪ Small sample size. ▪ Sample primarily African-American children living in low-income households. ▪ Unique setting of intervention.
	Early Head Start	<ul style="list-style-type: none"> ▪ RCT with longitudinal follow-up 	YES	<ul style="list-style-type: none"> ▪ Reduced response rate at the 5th grade follow-up (54.4 percent), thereby limiting or reducing statistical power for detecting impact.
	Infant Health and Development	<ul style="list-style-type: none"> ▪ RCT with longitudinal follow-up 	YES	<ul style="list-style-type: none"> ▪ Study sample is limited to premature low-birth-weight children and their parents.
	Harlem Children's Zone Baby College	<ul style="list-style-type: none"> ▪ Quasi-experimental 	NO	<ul style="list-style-type: none"> ▪ Few formal, rigorous studies on HCZ; only one quasi-experimental study conducted to date. ▪ Need more longitudinal data. ▪ Need more research on other outcomes (e.g., child health, maternal health, father involvement, family economic outcomes).
	Quality Rating and Improvement Systems – Improving Quality and Access	<ul style="list-style-type: none"> ▪ Descriptive 	NO	<ul style="list-style-type: none"> ▪ Research base is limited to descriptive studies. ▪ Few studies include child outcomes.

Program Categories/ Policy Levers	Specific Program/ Policy	Research Design	Strong Findings	Limitations of Research Base
Home Visitation and Parent Support Programs	Nurse-Family Partnership	<ul style="list-style-type: none"> ▪ RCT 	MAYBE	<ul style="list-style-type: none"> ▪ Inconsistent findings across three RCTs.
	Healthy Families America	<ul style="list-style-type: none"> ▪ RCT 	MAYBE	<ul style="list-style-type: none"> ▪ Inconsistent findings. ▪ Results might not be generalizable to other diverse parts of the country. ▪ Fidelity of program implementation.
	The Durham Connects/Family Connects Initiative	<ul style="list-style-type: none"> ▪ RCT impact evaluation ▪ Descriptive 	YES	<ul style="list-style-type: none"> ▪ No limitations were identified.
	Even Start	<ul style="list-style-type: none"> ▪ RCT 	NO	<ul style="list-style-type: none"> ▪ Small sample size, generalizability, design limitations and the timing of the study.
	Healthy Start	<ul style="list-style-type: none"> ▪ Quasi-experimental 	MAYBE	<ul style="list-style-type: none"> ▪ Inconsistent findings. ▪ No rigorous studies identified.
	Parents as Teachers	<ul style="list-style-type: none"> ▪ RCT ▪ Descriptive 	MAYBE	<ul style="list-style-type: none"> ▪ Inconsistent findings. ▪ No large-scale or national RCT studies. ▪ Results from the studies to date show program has small effects on a handful of outcomes measured or no statistically significant effects.
Family Income Supports	Special Supplemental Nutrition Program for Women, Infants, and Children	<ul style="list-style-type: none"> ▪ Longitudinal ▪ Descriptive 	YES	<ul style="list-style-type: none"> ▪ No RCT, correlational and descriptive studies. ▪ Stud designs have some limitations including potential selection bias.
	Child-Care Subsidies	<ul style="list-style-type: none"> ▪ Descriptive ▪ Longitudinal regression 	MAYBE	<ul style="list-style-type: none"> ▪ Few rigorous studies identified. ▪ Few studies looking at the impact on child development, parent outcomes and family well-being. ▪ No national or large-scale studies.

Program Categories/ Policy Levers	Specific Program/ Policy	Research Design	Strong Findings	Limitations of Research Base
	Earned Income Tax Credit	<ul style="list-style-type: none"> ▪ Descriptive ▪ Quasi-experimental 	YES	<ul style="list-style-type: none"> ▪ Study findings address labor supply and labor behavior of adults using secondary data, less on young children’s outcomes.
	The Family and Medical Leave Act	<ul style="list-style-type: none"> ▪ Descriptive 	YES	<ul style="list-style-type: none"> ▪ Descriptive studies, few rigorous studies and no RCTs identified. ▪ Research focuses on the economic impact of FMLA on businesses, not on impact on children’s development and family life.
Developmental Screening Tools, Early Intervention and Pediatric Risk Screeners	Safe Environment for Every Kid	<ul style="list-style-type: none"> ▪ Two RCTs 	YES	<ul style="list-style-type: none"> ▪ Few rigorous studies identified.
	Developmental Screening Tools	<ul style="list-style-type: none"> ▪ Psychometric, descriptive 	NO	<ul style="list-style-type: none"> ▪ Little evidence of impact on child and family outcomes, particularly to outcomes related to inequality.
	Early Intervention	<ul style="list-style-type: none"> ▪ Descriptive, longitudinal 	MAYBE	<ul style="list-style-type: none"> ▪ Descriptive studies, few rigorous studies and no RCTs identified. ▪ Some studies on impact on family and child outcomes. No evidence of impact on child and family outcomes, particularly to outcomes related to inequality.
	Child Abuse and Trauma Prevention Programs	<ul style="list-style-type: none"> ▪ Various designs, no large-scale RCT other than home visitation programs 	NO	<ul style="list-style-type: none"> ▪ No research identified that demonstrates how child abuse prevention programs affect child and family outcomes related to inequality indicators. ▪ Some programmatic interventions in the child abuse prevention and child welfare fields show promising approaches to mitigate the effects of toxic stress and support positive development in young foster children.

Table B-5 Notes

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Appendix C. Publicly Available Early Childhood Birth-to-Age-3 Datasets

Appendix Table C-1. Nationally Representative Datasets

Dataset	Purpose
American Community Survey	U.S. Census Bureau mandatory survey of a small percentage of the American population. The ACS aims to collect data that would be informative to communities, state governments and federal programs in planning investments and services.
Early Childhood Longitudinal Study, Birth Cohort	ECLS-B was designed to describe children’s first experiences and relationships. The longitudinal nature of the study enables researchers to study children’s physical, cognitive, language and social-emotional development and to relate children’s growth and development to their early learning environment.
National Health and Nutrition Examination Survey	The NHANES collects comprehensive cross-sectional data on the nutrition and health of Americans, including infants and toddlers.
National Household Education Survey – Early Childhood Program Participation	NHES provides descriptive data on the educational activities of the U.S. population and offers researchers, educators and policymakers various statistics on the condition of education in the United States. These surveys cover learning at all ages, from early childhood to school age through adulthood.
National Longitudinal Survey of Youth – Child Supplement	NLSY – Child Supplement is a separate survey of all children born to female respondents in the larger NLSY 1979 cohort (NLSY79). In addition to mothers’ information that can be obtained in the NLSY79, the Child Supplement included assessments of each child as well as additional demographic and developmental information collected from either the mother or child.
National Maternal and Infant Health Survey	The objective of the NMIHS was to collect data needed by federal, state and private researchers to study factors related to poor pregnancy outcomes, including low birth weight, stillbirth, infant illness and infant death. The NMIHS provided data on socio-economic and demographic characteristics of mothers, prenatal care, pregnancy history, occupational background, health status of mother and infant, and types and sources of medical care received.
National Survey of Early Care and Education	The primary goal of NSECE is to provide an overview of the availability and use of early care and education in the United States.
National Survey of Early Childhood Health	This survey was designed to collect data regarding parents’ perceptions of their children’s pediatric care and to examine relationships between the promotion of health in the pediatric office and promotion of health in the home.

Dataset	Purpose
Panel Study of Income Dynamics, Child Development Supplement	<p>CDS is part of PSID, which is a longitudinal study of a representative sample of U.S. individuals and their families. PSID began in 1968 and has collected data on family composition changes, housing and food expenditures, marriage and fertility histories, employment, income, time spent in housework, health, consumption, wealth, and so forth.</p> <p>Starting in 1997, CDS was implemented to collect additional information on children from birth through age 12 and their parents (with a limit of two children per family). The goal was to develop a comprehensive, nationally representative, longitudinal dataset of children and their families.</p>
Survey of Income and Program Participation	<p>SIPP began in 1983 and is a continuous series of national panels. Each panel consisted of a representative sample of individuals in households interviewed over a period of approximately four years.</p>

Table C-2. Additional Datasets (Not Nationally Representative)

Dataset	Description
Adverse Childhood Experiences Study	The ACE Study is one of the large-scale studies conducted to assess the relationships between maltreatment during childhood and later-life health and well-being.
Early Head Start Research and Evaluation Project	The Early Head Start Research and Evaluation project was a large-scale, randomized evaluation of Early Head Start that began in the fall of 1995, which was about the same time the first 68 Early Head Start programs were funded.
Early Head Start Family and Child Experiences Study	Known as Baby FACES, this is a longitudinal, descriptive study that provides information on Early Head Start programs. Its design is similar to the Head Start Family and Child Experience Survey (FACES).
Fragile Families and Child Well-Being Study	The FF Study was a longitudinal study that followed a cohort of nearly 5,000 children born in large U.S. cities from 1998 to 2000. Approximately three-quarters of the sampled children were born to unmarried parents.
National Early Intervention Longitudinal Study	The NEILS was conducted from 1996 to 2007 and was the first national study of Part C of the Individuals with Disabilities Education Act early intervention program for infants/toddlers with disabilities (or those at risk for developmental delay) and their families. The study included a nationally representative sample of 3,338 infants and toddlers and their families. NEILS followed children from entry into the early intervention service system through kindergarten.
Infant Health and Development Program Study	The IHDP Study was conducted from 1985 to 1988 to investigate the effects of providing comprehensive early intervention services to low-birth-weight children. Specifically, infants with birth weight of less than 2,500 grams or preterm infants with gestation age of 37 weeks or less were targeted.
Quality Interventions for Early Care and Education	The purpose of QUINCE is to determine the conditions under which an assessment-based, onsite consultation model of child-care provider training (called the Partnerships for Inclusion consultation model) not only improved the quality of the family home or child-care classroom but also resulted in positive child outcomes.
Study of Early Child Care and Youth Development	National Institute of Child Health and Human Development's SECCYD is a longitudinal study designed to comprehensively examine the relationships between child-care experiences, child-care characteristics and children's developmental outcomes.
Welfare, Children and Families: A Three-City Study	The Three-City Study was an intensive study in Boston, Chicago and San Antonio in 1999 to assess the well-being of children and families living in low-income households during the postwelfare period. It investigated the strategies families used to respond to welfare reform in terms of employment, schooling or other forms of training, residential mobility and fertility. The study also examined how these strategies affected the children.

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