RESEARCH HIGHLIGHT

Children's Learning and Development Benefits from High-Quality Early Care and Education: A Summary of the Evidence

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Key Highlights



- Participating in early care and education (ECE)[a] helps children to develop skills that will benefit them in school and in life. Specifically, research from the United States shows that ECE can help children learn the foundational skills for reading, math, self-control, and positive relationships.
- Children benefit most when ECE is high-quality. High-quality ECE programs go beyond basic health and safety requirements to provide warm, responsive relationships with educators,[b] stimulating and developmentally appropriate curricula, and ongoing training for educators. These features of ECE enhance children's cognitive and social-emotional development.
- All young children can benefit from high-quality ECE, but it can be especially helpful for children from families experiencing low household income,[c] children with disabilities served in inclusive classrooms, and dual language learners.
- The benefits of high-quality ECE for the child often last into kindergarten, and some studies show lasting effects into middle school and high school. The quality of later schooling that a child experiences can either build upon or counteract these benefits. Even though evidence for long-term effects of ECE on child development is mixed, some studies show that participating in high-quality ECE yields long-term advantages for individuals and for society, including higher educational attainment, better adult health, and less involvement in crime.

[a] Early care and education includes all care and educational settings provided for children birth to age 5 before formal K-12 education begins, including center-based and home-based programs.

[b] ECE educators are individual members of the early care and education workforce. Educators include teachers, home-based providers, assistant teachers, or specialists directly working with children.

[c] Families whose annual incomes make them eligible to receive child care subsidies within their respective states, or whose incomes are below a given threshold of what is minimally required to meet their basic needs, such as food, clothing, shelter, and utilities. This definition is derived from resources from ACF and the Institute for Research on Poverty.

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Introduction

The majority of children from birth to age 5 in the United States regularly attend ECE programs.[1,2] There are many types of ECE in the United States. Some are publicly funded, such as the federal Head Start and Early Head Start programs and state-funded pre-kindergarten. Others are privately funded community-based businesses such as home-based and center-based child care. Given the substantial time that young children spend in ECE, it is important that parents and policymakers understand how ECE supports children's development and learning. In this brief, we summarize the research evidence on how high-quality ECE benefits all young children, as well as key subgroups, such as children who are dual language learners and children with disabilities. We also explain the specific features of high-quality ECE that research finds are most important for children's development. Finally, we provide details about the research evidence summarized in this brief.

Why Invest in ECE?

From the ages of birth to 5, children's brains are developing rapidly and their capacity for learning is unparalleled.[3] In these formative years, children are laying the cognitive and behavioral foundation for the rest of their development and learning. During this period, they are highly susceptible to the influence of the environment; safe, nurturing, enriching environments strengthen early brain development, while stressful or unstable environments can harm it.[4] When children attend high-quality ECE during these important years, they benefit from enhanced cognitive and social-emotional development.[5,6] Society also benefits not only because more parents can participate in the workforce (which presents immediate economic and social benefits for families), but also because children may do better in the future in terms of educational success, earning potential, and adult health.[7]

In the past few decades, scientific knowledge and public understanding about early brain development and the strong return on investing in supports for young children has expanded. In response, federal funding for ECE has likewise increased.[8] Two of the biggest investments have been the Child Care and Development Fund (CCDF) and Head Start. The CCDF provides subsidies to help families with low incomes pay for ECE.[d] Head Start and Early Head Start are free, high-quality ECE programs for children, many of whom are eligible because their family has a low income.[e] Despite these federal programs, many children do not have sufficient access to high-quality ECE.[f] As currently funded, only a fraction of eligible children enroll in Head Start or receive subsidies.[9-11] Further, some families who use subsidies still struggle to afford ECE copayments, and many families who are not eligible for subsidies still find ECE to be unaffordable. This can limit families' access to higher-quality ECE options that are more likely to support children's development.[12]

[d] See this link for more information about the Child Care and Development Fund: https://childcareta.acf.hhs.gov/ccdf-fundamentals

[e] See this link for more information about Head Start and Early Head Start: https://childcare.gov/consumer-education/head-start-and-early-head-start

[f] "Access to early care and education means that parents, with reasonable effort and affordability, can enroll their child in an arrangement that supports the child's development and meets the parents' needs." https://www.acf.hhs.gov/sites/default/files/documents/opre/cceepra_access_guidebook_final_213_b508.pdf

Defining High-Quality ECE

There is scientific consensus that ECE experiences are linked with positive child outcomes *primarily when the ECE is high-quality*.[13] In this evidence review, we defined studies of "high-quality ECE" as those examining ECE which provides enrichment to children beyond minimal health and safety requirements, and that either 1) includes one or more of the features associated with quality in the ECE literature: a sensitive and responsive caregiving relationship between educator and child, the implementation of a curriculum or age-appropriate instruction, educator preparation, and professional support for the educator; 2) has standards/regulations that align with high-quality practices noted in the aforementioned features, or 3) reports a quality rating from a state or local quality rating and improvement system that indicates the program performs well on the aforementioned features of quality.

How does High-Quality ECE Benefit Young Children?

High-quality ECE can benefit children's cognitive, social, and behavioral development. Studies show that children in high-quality ECE make greater improvements in these domains when compared to children from similar backgrounds who never enrolled in ECE. Children's progress in these domains increases over the course of their time and participation in ECE. However, the size of the effect of ECE on children's development will vary based on the larger context of their daily lives as well as the characteristics of the ECE program (e.g., quality) and the amount of time spent in ECE (i.e., dosage).

Cognitive Benefits. Children in high-quality ECE demonstrate improvements in cognitive skills. These skills prepare them for later success in school, and include vocabulary/literacy, math, reasoning, and academic achievement.[14-20]

Social and Behavioral Benefits. Children in high-quality ECE also demonstrate improved social-emotional development,[9] stronger self-regulation,[21] and reduced behavior problems.[22-26] Having the ability to get along with others, regulate emotions, and control impulses are all critical skills for success in school and relationships.

Dosage Matters. The amount of time that children spend in ECE varies, both in terms of the duration of time enrolled and the number of hours per week. Dosage differences may affect how much children benefit from high-quality ECE. For example, children who participate in two years of Head Start (as opposed to one year) have stronger academic, cognitive, and social literacy skills upon exiting Head Start and at the end of their kindergarten year.[27] Several studies indicate that participating in ECE beginning as an infant or toddler and continuing until kindergarten entry is associated with stronger cognitive skills compared to children who enroll in ECE closer to kindergarten.[28-31] However, within these studies it is difficult to disentangle effects based on age of entry to ECE from effects based on amount of exposure to ECE.

[9] "Social development refers to a child's ability to create and sustain meaningful relationships with adults and other children. Emotional development is a child's ability to express, recognize, and manage his or her emotions, as well as respond appropriately to others' emotions." https://eclkc.ohs.acf.hhs.gov/school-readiness/effective-practice-guides/social-emotional-development

Context Matters. ECE has a considerable influence on early development, but it is one piece of the larger picture. Children's early development is also profoundly affected by their physical health, their families' well-being, their neighborhood's resources, and many other factors. In the United States, factors that promote healthy development are not distributed evenly; communities that are low income and/or that have experienced systemic inequities, including Black, Latino,[h] and/or Indigenous communities, often experience poorer physical and mental health and have access to fewer neighborhood resources, including ECE.[33-37] Likely due to the many contextual factors that play a role in child development, ECE's positive effect is meaningful yet often statistically small.[38,39] The size of the effect also depends on the type of ECE, the quality of the ECE, and the type of study conducted.[40,41] More information about study designs is available at the end of this brief.

What Are the Added Benefits of High-Quality ECE for Key Groups of Young Children?

While all children stand to benefit from high-quality ECE, the effects of ECE are not uniform across all groups of children who participate. Research shows that high-quality ECE benefits key groups of children in different ways. In some scenarios, this may reflect the role that ECE plays in providing early learning environments that meet children's unique needs and/or buffer them against early stressors such as poverty.

Children from families with low incomes have larger-than-average benefits. There is considerable evidence that, while all children may benefit from high-quality ECE, children from families with low incomes stand to derive more benefits than children from families with higher incomes.[42] Specifically, children from families with low incomes show greater gains in academic skills and self-regulation after participating in high-quality ECE.[43,44] They also show more sustained benefits in third grade reading achievement,[45] middle school math and reading scores,[46] college graduation, and adult wages relative to children from families with higher incomes.[47] Enriching ECE environments may be more critical to healthy brain development for children from families with low incomes (and therefore have a larger impact) because their families likely experience structural inequities that may limit their access to other forms of early enrichment for young children.

Dual Language Learners (DLLs) have larger-than-average benefits. There is evidence that DLLs who enroll in high-quality ECE make greater gains in cognitive skills, such as receptive language, math, and executive functioning,[i] compared to children who are monolingual English speakers.[48-52] In some cases, these benefits may be attributed to their limited exposure to English prior to enrolling in ECE [53,54] and may be even greater when children begin ECE earlier in development.[55]

[h] We use "Hispanic" and "Latino" interchangeably throughout this report. The terms are used to reflect the U.S. Census definition to include individuals having origins in Mexico, Puerto Rico, and Cuba, as well as other "Hispanic, Latino or Spanish" origins.
[i] Executive functioning refers to cognitive and behavioral skills that underlie the ability to plan, focus attention, ignore distractions, remember instructions, control impulses, and work on multiple tasks simultaneously. See Baggetta and Alexander (2016) for more information about how this term has been defined in the literature.

Spotlight on Infants and Toddlers

Much of the research cited in this brief comes from ECE programs serving children ages 3-5. There is less research on ECE for infants and toddlers, yet the existing studies provide meaningful information about the value of ECE for children under 3 years old.[56,57]

What are the benefits of high-quality ECE for infants and toddlers?

Infants and toddlers accrue developmental benefits from participation in high-quality ECE.[58] For example, at ages 2 and 3, children in high-quality ECE demonstrate stronger language, math, and social-emotional skills than children of the same age not in ECE. [59,60] However, most studies of infants and toddlers in ECE follow them over time, making it more difficult to disentangle the unique effects of participation in ECE for infants and toddlers from the cumulative effects of having more years of ECE prior to kindergarten entry (see the "Dosage Matters" section of this brief).

What does high-quality ECE look like for infants and toddlers?

The characteristics of high-quality ECE often look different for infants and toddlers than for older preschoolers.[61] For instance, infants and toddlers need lower adult-child ratios than older preschoolers so that ECE educators can adequately attend to their physical and social needs.[62] Further, infants and toddlers show greater developmental gains when they experience continuity of care (i.e., the same caregiver over time; for example, over the day or week, or from year to year).[63]

Children with disabilities make gains in inclusive classrooms. There is evidence showing that children with disabilities experience gains in social-emotional, language/literacy, and math skills[64-70] when they are served in inclusive[j] ECE classrooms alongside their typically developing peers.[71] The majority of longitudinal studies show that participating in high-quality ECE prior to elementary school is associated with a lower likelihood of special education placements.[72-75] Children without documented disabilities make similar developmental gains in general and inclusive classrooms.[76,77]

What Does the Research Say About the Benefits of High-Quality ECE for Individuals' Longer-Term Development?

Many studies report that high-quality ECE positively affects child development into kindergarten. Findings on the effects later in life are mixed, and may reflect the program, policy, and/or sociocultural contexts where the studies took place and the ways these contexts affected the participating children and families.[78]

[j] In their 2015 Policy Statement on Inclusion of Children with Disabilities in Early Childhood Programs, the U.S. Department of Health and Human Services and the U.S. Department of Education define inclusion in early childhood programs as "including children with disabilities in early childhood programs, together with their peers without disabilities; holding high expectations and intentionally promoting participation in all learning and social activities, facilitated by individualized accommodations; and using evidence-based services and supports to foster their development (cognitive, language, communication, physical, behavioral, and social-emotional), friendships with peers, and sense of belonging."

Kindergarten effects. Many positive effects of high-quality ECE are maintained into the kindergarten year, including advantages in cognitive development (e.g., literacy), executive functioning, and social skills.[79-85]

Later schooling effects. Some studies show sustained benefits into later elementary, middle, and high school (e.g., fewer social-emotional challenges, better mathematics achievement, better vocabulary, reduced grade retention).[86-91] However, other studies show that the benefits of ECE on school outcomes become less evident over time, resulting in test scores that are either on par with or lower than those of children who did not attend ECE programs, holding child and family characteristics constant.[92-95]

Adult and societal effects. Evidence shows that even when positive associations between ECE and children's later development dissipate over time, ECE is associated with lasting adult and societal benefits such as completion of more years of education, higher high school graduation rates, lower involvement with the criminal justice system, better adult health, and higher earnings compared to individuals with similar backgrounds who did not participate in high-quality ECE.[96-102] These findings are strongest when intensive high-quality "interventions" are delivered in ECE,[k] though some studies have shown that attending other high-quality, widely-available types of ECE (such as Head Start and some center-based programs) is also associated with long-term effects for individuals.[103-105]



[k] Seminal studies of Abecedarian Project, Perry Preschool Project, and HighScope have described these studies as evaluations of early childhood interventions delivered in ECE rather than evaluations of models or types of ECE.

What Aspects of ECE Quality Lead to Stronger Developmental Benefits for Children?

When ECE is high-quality—meaning that it provides enrichment beyond minimal health and safety requirements—it is much more likely to benefit children's cognitive and social-emotional skills than lower-quality care.[106-112] Quality has various facets, including the quality of educator-child relationships, instruction and curricula, and educator preparation and professional support.[113]

Educator-Child Relationships. The quality of the relationship between ECE educators and children is a critical part of a child's ECE experience that is associated with positive developmental outcomes. ECE educators' provision of sensitive, responsive care and support for children's emotions is associated with improvements in children's development of social skills, self-control, language development, classroom behavior, and academic skills.[114-121]

Effective Teaching and Use of Curricula. ECE educators' provision of curricula and instructional support (e.g., introducing new content, verbally engaging children, and asking questions that facilitate learning) is associated with gains in children's language, literacy, mathematics, and other cognitive and academic domains.[122-127]

Educator Preparation and Professional Development. Educators' ability to help children learn in ECE classrooms plays a key role in determining the quality of the environment and the extent to which children benefit from ECE. Therefore, it is important to know how ECE educators have been prepared to support children in learning and development. Studies of educator preparation and the potential benefits of educator preparation for children have examined factors such as highest level of education, whether educators completed a higher degree related to ECE, and participation in professional development (participation in training outside of higher education). Surprisingly, studies have not found a consistent link between educators' highest level of education or completion of ECE coursework (including degrees and credentials) and cognitive and behavioral benefits for children.[128,129]

Several rigorous studies have shown that professional development that trains educators on specific curricula and developmentally appropriate practices can improve classroom quality in ECE, which in turn may be beneficial for children's learning and development.[130-133] Effects of professional development appear to be strongest when the content is aligned with the aspect of child development being measured (e.g., training on implementing an early literacy curriculum and its effects on child literacy skills) and when professional development programs involve individualized support or coaching for the ECE educator.[134]

About the Research Evidence

This brief summarizes a complex and nuanced field of study. The findings included here are only those that are well-established, meaning that multiple studies with different methods and populations have repeatedly led to these conclusions. The information presented is based on key studies published in the last 10 years and seminal studies in the field[135,136] that have greatly influenced research and policy agendas. It is important for readers to keep in mind the ways that these studies differ from one another.

What is being studied? Studies differ in the type of ECE being investigated (e.g., pre-kindergarten, Head Start, home-based child care, center-based child care), the quality of the particular ECE programs that enrolled in the study (although all cited here are thought to be relatively high-quality),[137,138] and the length of time children in the study have attended ECE.[139] Some ECE programs, such as Early Head Start and Head Start, provide comprehensive services to families (e.g., home visiting, health services), while others provide only ECE services.[140]

Who is being compared? To look at the effect of ECE on children, there needs to be a comparison of some kind using one or more measure(s) of development. Children can be compared to their own earlier scores, to a group of children enrolled in a different type of ECE, or to a group of children never enrolled in ECE. Studies that compare children enrolled in ECE to peers who stay at home or who are cared for by an adult with whom they had a prior relationship typically show larger positive effects of ECE. In studies that compare children in one type of ECE to those enrolled in another type of ECE or children whose ECE enrollment status is unknown, the effects are typically smaller.[141,142] These comparisons all use some kind of measurement tool (e.g., survey, test score, observation) meant to capture a particular concept. No one tool is a perfect measure of a concept, and the tools used in these studies vary in how appropriate they are for children's ages, languages, and cultural backgrounds.[143] Therefore, the measurement tools used in each study can affect the findings.

Ultimately, research findings are more credible when multiple studies report similar results even though they use different methods and samples. This does not always happen—sometimes findings differ based on how different studies try to answer the same question. This is called "mixed effects." As described in this brief, the evidence for the short-term benefits of ECE for kindergartners is strong and consistent, while the evidence for sustained effects in later schooling is mixed. There are several explanations for this pattern of findings. Researchers think that the early advantage that some children get from ECE can be diminished by more limited educational opportunities in lower-quality K-12 education, or that their peers may catch up to them if the kindergarten curriculum repeats what children learned in ECE rather than builds upon it.[144-146]

Additional information to consider about studies included in this evidence review

- The conclusions presented in this brief reflect the state of research evidence for ECE on children's learning and development as of January 2023, integrating across research studies of children ages birth through five participating in various types of ECE including center- and home-based programs, preschool, pre-kindergarten, Early Head Start, and Head Start.
- While additional citations are available for many of the statements, results of studies using the most rigorous research designs and methodologies[I] are prioritized throughout this brief.
- It should be noted that much of the federal funding for ECE has been focused on public preschool and pre-kindergarten programs for families with low incomes (e.g. Head Start).[147] This investment aims to promote equitable early-life experiences for children who historically have lacked access to high-quality early learning environments and have experienced other systemic inequities due to disinvestment, discrimination, and racism.[148-150] The evidence base summarized in this brief reflects this emphasis; much of the existing large-scale and rigorous studies document the impacts of publicly-funded (as opposed to private-pay) ECE with samples of predominantly children living in households with lower incomes and who identify as Black or African American.[151-154]

[I] These methods include meta-analyses and randomized controlled trials. Meta-analyses are statistical analyses that combine the results of multiple studies of the same topic, leading to an overall summary of the effect of an intervention. Randomized controlled trials (RCTs) compare groups of participants receiving an intervention with those who are not, where participants are randomly assigned to one of the two groups to ensure that the groups do not systematically differ before the intervention, so that differences can be attributed to the intervention alone. Studies with these research designs were prioritized in this brief, but many single-sample research studies were also cited.

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