

ASPE RESEARCH BRIEF

OFFICE OF THE ASSISTANT SECRETARY FOR PLANNING AND EVALUATION
OFFICE OF HUMAN SERVICES POLICY - U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

THE EARLY ACHIEVEMENT AND DEVELOPMENT GAP

Introduction

The large gap in achievement and development between children growing up in poor and low-income families and their peers in more advantaged situations continues to be a concern to parents, the public, and policymakers. This brief describes research on the achievement and development gap – its origins, size, and what we know about how public policy can narrow the gap.

How early in life do we see evidence of achievement and developmental gaps?

Gaps in achievement and development by socioeconomic status (SES) begin well before kindergarten, and these gaps widen as children grow older.¹ Gaps in development between low-income (family income at or below 200 percent FPL) and higher income (family income above 200 percent FPL) children are detectable as early as 9 months of age, and widen by 24 months of age.² Differences in achievement by maternal education, race/ethnicity, and home language are also evident at 9 and 24 months of age.³ At 9 months, infants from low-income families are very slightly behind their higher income peers in cognitive skills (about .16 of a standard deviation (SD))^a. Also, their parents rate them as less healthy and displaying fewer positive behaviors. By 24 months, the cognitive skill gap and behavior gap have widened further (to .5 and nearly .33 of a SD, respectively).⁴ The findings from a recent small study suggest that, by 24 months of age, children from families with lower SES (based on parental education and occupation level) are 6 months behind in language

development compared to children from higher SES families. Further, between 18 and 24 months of age, lower SES children appear to learn 30 percent fewer words compared to children from higher SES families.⁵ However, while not generalizable to all infants and toddlers because of the study's sample size and sampling method (convenience sample), these findings provide suggestive evidence for the existence of this early gap.

What is the magnitude of achievement and developmental gaps by family income and education at school entry, and does it widen during the school years?

There are large gaps by SES at school entry, which persist, and in some domains widen, over children's school careers. By kindergarten entry, there is a significant gap in reading and math (1 SD) between children from very low-income families (i.e., family income in the bottom 20 percent of the distribution for the sample) and those from very high-income families (i.e., family income in the top 20 percent of the distribution). Children from very low-income families are also behind (.5 of a SD) children from middle-income families (e.g., family income in the middle 20 percent of the distribution), though less so.⁶ Although much smaller, there are also differences by family income in teacher-reported externalizing problem behaviors at kindergarten entry. Children from very low-income families are slightly behind (.25 of a SD) their counterparts from very high-income families. This gap persists through fifth grade (with poor children continuing to demonstrate significantly more behavior problems).⁷

ABOUT THIS RESEARCH BRIEF

This ASPE Research Brief presents a summary of what is known about gaps in children's achievement and development for children by family income and socioeconomic status.

The content originated at research meetings convened by Deborah Phillips at the Foundation for Child Development and Georgetown University. The brief was prepared by ASPE's Lindsey Hutchison, Taryn Morrissey, and Kimberly Burgess, with substantial input from Katherine Magnuson and Jane Waldfogel.

Office of the Assistant Secretary for Planning and Evaluation
Office of Human Services Policy
US Department of Health and Human Services
Washington, DC 20201

Like family income, parents' education is also a factor in the achievement gap. At 24 months, there is a sizeable gap in cognitive skills (nearly .9 of a SD) between children whose mothers have a Bachelor's degree, and children whose mothers have less than a high school degree.⁸ By age five, there is a large gap in reading and math skills (1 SD) for children whose parents have less than a high school degree compared to a B.A or higher. This gap persists through age 14.⁹ Overall, achievement gaps by family income and education are large by the time children begin formal schooling (i.e., at kindergarten entry), and change very little beyond elementary school.¹⁰

How big are the early gaps in achievement and development by race, ethnicity, or home language?

Today, the largest achievement and developmental gaps are found to be between high-income and low-income children.¹¹ However, there is also evidence of gaps by race, ethnicity, and home language. There is a large body of research on Black-White, Hispanic-White, and Immigrant-Native achievement gaps. At 9 months, gaps in cognitive skills exist between White children and minority children, with the largest gap for American Indian/Alaskan Native children (.3 of a SD).¹² By 24 months, these gaps in cognitive skills between minority children and their White peers have widened, and are larger for American Indian/Alaskan Native children (.9 of a SD) than for Black children (.6 of a SD).¹³ Minority children are also less likely to be rated by their parents as being in excellent or very good health at both 9 and 24 months, and show fewer positive behaviors at 24 months, compared to their White peers.¹⁴

At school entry, Black children tend to be behind White children in reading skills (.4 of a SD) and even further behind in math skills (.6 to .8 of a SD). These gaps widen further by fifth grade (1 SD for math; .8 of a SD for reading).¹⁵ At school entry, Hispanic children also trail White children in reading (.5 of a SD) and are further behind in math (almost .8 of a SD).¹⁶ For children from Spanish-speaking families, there is indication that, by 24 months, these children are behind their native English-speaking peers in cognitive skills (.7 of a SD).¹⁷ Additionally, while children of immigrants who are not proficient in English trail behind native English-speaking peers on assessments that require the use of English, there is evidence that the gaps that are present at school entry narrow as these children improve in their English proficiency.¹⁸ Further, children from immigrant families do not appear to be behind their native peers in other

nonverbal cognitive domains, and do not display greater behavior problems.¹⁹

Importantly, while the achievement and development gaps by race/ethnicity remain large, they have narrowed over the last few decades. It is important to note that child background characteristics, such as race, ethnicity, and home language, are often confounded with differences in SES. For example, there is evidence that the Black-White gap in reading skills at school entry is reduced by half (to .2 of a SD) or more after accounting for SES.²⁰

How do multiple risk factors contribute to achievement and developmental gaps?

There is evidence that multiple risk factors are associated with widening gaps in cognitive skills during infancy and toddlerhood, suggesting a cumulative association. For instance, a cognitive skills gap does not appear to exist between children experiencing only low family income (below 200 percent FPL) as a risk factor compared to children experiencing low family income and one additional risk factor (racial/ethnic minority, a home language other than English, or a low level of maternal education). However, low-income children with two or three additional risk factors do appear to be substantially behind low-income only children (.6 and .9 of a SD, respectively).²¹

How have achievement and developmental gaps changed historically?

Gaps in achievement between children living in the poorest households and their peers living in the highest income households have widened over the last few decades. Test scores of very low-income children (those in the lowest 10 percent of income, or lowest decile) born around 1950 lagged behind those of their affluent peers (those in the highest 10 percent of income) by a little over half of a SD -- about 60 points on an SAT-type test. Fifty years later, this gap was twice as large.²² From the early 1960s to the early 1980s, college graduation rates for children born into the highest income families jumped from 33 percent to 54 percent, while college graduation rates for children born into very low-income families increased by a mere 4 percentage points.²³ This may be due in part to the fact that the incomes for families at the top of the income distribution (80th percentile and above) grew at a much faster rate during these decades than that for families at the low end of the income distribution.²⁴

What are the long-term consequences in achievement and development for children who experience poverty early in life?

Experiencing poverty early in life relates to disparities in long-term social, educational, and economic outcomes. Persistently poor children (i.e., those from families with income below the FPL for at least half of their childhood years, birth to age 17) are nearly 90 percent more likely than never-poor children to not complete high school by their 20s, and are four times more likely to give birth outside of marriage during their teenage years.²⁵ Additionally, children who experience poverty earlier in life (birth to age 2; family income below the FPL) are 30 percent less likely to finish high school compared to children who do not experience poverty until later in childhood.²⁶ In addition, the growing gaps in achievement by income over time have occurred during a time period when the returns to educational attainment for adult earnings have been growing. Thus, the growing achievement gap among children contributes to a widening income gap in adulthood.²⁷

What do we know about the mechanisms that contribute to these gaps and diverging pathways in early childhood?

The gaps we have discussed so far are strongly related to the types of early experiences children have at home and in caregiving settings. Greater income can be used to purchase goods and enriching opportunities like high-quality child care and early education, whereas a lack of resources may mean lower-quality or unstable care (although there is some evidence that children just above poverty or from middle-income families may receive the lowest-quality care; see Phillips et al., 2008²⁸). In addition to the positive experiences that money can buy, it reduces economic hardship that contributes to parent stress, which carries over to children. Indeed, there is evidence that parenting behaviors and parenting style are a driving force in the achievement gaps evident between lower and higher income children.²⁹

Children from lower income and/or lower SES families experience differences in parenting and home language, literacy, and cognitive environments.³⁰ Such children often experience less rich verbal environments at home with family and in caregiver interactions over the first four years of life. As described in Hart and Risley's (1995) seminal study, by age 3, a child from a low-SES family (based on parental occupation) will be exposed to approximately 13 million words, on average, compared to

45 million words for a child from a high-SES family.³¹ Children from lower SES families also have less exposure to enriched learning environments, including access to and use of children's books and other materials, and experience more television time, relative to children from higher SES families.³²

Children's differential access to educational, health care, and other opportunities by family income and/or family SES also contribute to achievement and developmental gaps. For instance, national data from 2005 and 2007 indicate that about 90 percent of four-year-olds in the top income quintile (top 20 percent) attend some kind of preschool program, compared to 65 percent of those in the two lowest income quintiles (bottom 40 percent). Similarly, about 80 percent of three-year-olds in the top income quintile attend preschool, compared to just 40 percent of those from the middle income and two lowest income quintiles (bottom 60 percent).³³ These factors may contribute to initial school readiness gaps, and the persistence of gaps throughout the elementary school years and beyond.³⁴

What does the evidence suggest for early care and education policies and programs intended to support school readiness for all children?

There are potentially multiple ways to help support the development of young children (e.g., parenting or health interventions); however, the most consistent evidence for supporting children's school readiness skills surrounds high-quality early care and education (ECE) programs. Expanding ECE services or targeting intensive early services to low-income children and their families may help narrow gaps in achievement and development. A recent meta-analysis of more than 65 studies found that ECE attendance had small to moderate effects (average effect size of .33 of a SD) on children's cognitive and achievement outcomes at the program's end. Across all follow-up data collection waves, effect sizes were small (averaged .26 of a SD), with impacts diminishing over time, on average, yet persisting for ten years.³⁵ The results of other meta-analytic studies also point to the positive effects of preschool education, with the largest effects on cognitive skills and smaller effects on socio-emotional skills.³⁶ Additionally, there is some evidence that participation in programs such as Head Start is related to better health outcomes for children (e.g., increased receipt of health screenings, immunizations, and dental exams).³⁷

Expansions in access to high-quality ECE programs may help narrow gaps in achievement and development. We

know that certain groups of children – Hispanic children, those from low-income families, immigrant families, and with less-educated parents – are less likely to be enrolled in preschool than their counterparts. For other groups of children who are already enrolled in preschool at relatively high rates, such as Black children, the more salient issue is that they tend to be in lower-quality settings.³⁸ Studies of universal pre-K programs in cities like Tulsa and Boston show that attending high-quality ECE benefits all children, but that attendance is especially beneficial to the most disadvantaged children and children from certain ethnic minority groups.³⁹ This suggests that expansions in access to high-quality ECE programs would likely benefit children across income and ethnic and racial groups, but particularly those from disadvantaged backgrounds.⁴⁰

References

- ¹ Duncan, G. J., & Magnuson, K. A. (2005). Can family socioeconomic resources account for racial and ethnic test score gaps? *Future of Children*, 15(1), 35-54.; Heckman, J. J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, 312, 1900-1902.; Magnuson, K., & Duncan, G. (2006). The role of family socioeconomic resources in racial test score gaps. *Developmental Review*, 26, 365-399.
- ² Halle, T., Forry, N., Hair, E., Perper, K., Wandner, L., Wessel, J., & Vick, J. (2009). *Disparities in early learning and development: Lessons from the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B): Executive Summary*. Retrieved from: http://www.childtrends.org/wp-content/uploads/2013/05/2009-52DisparitiesEL_ExecSumm.pdf.
- ³ Halle, et al. (2009).
- ⁴ Halle, et al. (2009).
- ⁵ Fernald, A., Marchman, V. A., & Weisleder, A. (2012). SES differences in language processing skill and vocabulary are evident at 18 months. *Developmental Science*, 16, 234-248.
- ⁶ Magnuson, K., Waldfogel, J., & Washbrook, E. (2012). The development of SES gradients in skills during the school years: Evidence from the United States and England. In J. Ermisch, M. Jantti, & T. Smeeding (Eds.), *From Parents to Children: The Intergenerational Transmission of Advantage*. New York: Russell Sage.
- ⁷ Magnuson, Waldfogel, & Washbrook. (2012).
- ⁸ Halle, et al. (2009).
- ⁹ Magnuson, Waldfogel, & Washbrook (2012).
- ¹⁰ Reardon, S. F. (2014). National Report Card: Education. In *State of the Union: The Poverty and Inequality Report 2014* (p. 53-59). Stanford, CA: The Stanford Center on Poverty and Inequality.
- ¹¹ Reardon, S. F. (2011). The widening academic-achievement gap between the rich and the poor: New evidence and possible explanations. In G. Duncan and R. Murnane (Eds.), *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. New York: Russell Sage.
- ¹² Halle, et al. (2009).
- ¹³ Halle, et al. (2009).
- ¹⁴ Halle, et al. (2009).
- ¹⁵ Magnuson, K. (2007). *Understanding School Readiness Gaps: SES, Race, and Ethnicity*. Powerpoint presented at the Mary McEvoy Lecture Series on Early Childhood and Public Policy, University of Minnesota, Feb. 17.
- ¹⁶ Magnuson (2007).
- ¹⁷ Halle, et al. (2009).
- ¹⁸ Waldfogel, J. (2013). *Setting the stage: Evidence of developmental and school readiness gaps*. Notes prepared for a meeting at the Foundation for Child Development, June 14, 2013.
- ¹⁹ Washbrook, E., Waldfogel, J., Bradbury, B., Corak, M., & Ghanghro, A. A. (2012). The development of young children of immigrants in Australia, Canada, the United Kingdom and the United States. *Child Development*, 83, 1591-1607.
- ²⁰ Magnuson (2007).
- ²¹ Halle, et al. (2009).

- ²² Duncan, G., & Murnane, R. (2011). Introduction: The American Dream, then and now. In G. Duncan and R. Murnane (Eds.), *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. New York: Russell Sage.
- ²³ Bailey, M. J., & Dynarski, S. M. (2011). Inequality in postsecondary education. In G. Duncan and R. Murnane (Eds.), *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. New York: Russell Sage.
- ²⁴ Duncan & Murnane (2011).
- ²⁵ Ratcliffe, C., & McKernan, S. (2012). *Childhood poverty and its lasting consequences*. Urban Institute. Retrieved from: <http://www.urban.org/publications/412659.html>.
- ²⁶ Ratcliffe & McKernan (2012).
- ²⁷ Duncan & Murnane (2011).
- ²⁸ Phillips, D. A., Voran, M., Kisker, E., Howes, C., & Whitebook, M. (2008). Child care for children in poverty: Opportunity or inequity? *Child Development*, 65, 472-492.
- ²⁹ Waldfogel, J., & Washbrook, E. (2011). Income-related gaps in school readiness in the United States and United Kingdom. In T. Smeeding, R. Erikson, and M. Jantti (Eds.), *Persistence, Privilege, and Parenting: The Comparative Study of Intergenerational Mobility*. New York: Russell Sage.
- ³⁰ Magnuson (2007).; Waldfogel (2013).
- ³¹ Hart, B., & Risley, T. R. (1995). *Meaningful Differences in the Everyday Experiences of Young American Children*. Baltimore, MD: Paul H. Brookes Publishing.
- ³² Magnuson (2007).; Waldfogel (2013).
- ³³ Barnett, W. S. (2010). Universal and targeted approaches to preschool education in the United States. *International Journal of Child Care and Education Policy*, 4, 1-12.
- ³⁴ Magnuson, Waldfogel, & Washbrook (2012).
- ³⁵ Leak, J., Duncan, G. J., Li, W., Magnuson, K., Schindler, H. S., Yoshikawa, H., & Shonkoff, J. P. (In Review). Timing in early childhood education: How cognitive and achievement program impacts vary by starting age, program duration, and time since the end of the program. National Forum on Early Childhood Policy and Programs.
- ³⁶ Camilli, G., Vargas, S., Ryan, S., & Barnett, W. S. (2010). Meta-analysis of the effects of early education interventions on cognitive and social development. *Teachers College Record*, 112, 579-620.; Morrissey, T., Hutchison, L., & Burgess, K., with Deming, D., & Gormley, W. (2014). *The short- and long-term impacts of large public early care and education programs*. ASPE Issue Brief.
- ³⁷ Currie, J., & Thomas, D. (1995). Does Head Start make a difference? *The American Economic Review*, 85(3), 341-364. Hale, B., Seitz, V., & Zigler, E. (1990). Health services and Head Start: A forgotten formula. *Journal of Applied Developmental Psychology*, 11(4), 447-458. U.S. Department of Health and Human Services. (2005). *Head Start Impact Study: First Year Findings*. Washington, DC: U.S. Department of Health and Human Services.
- ³⁸ Waldfogel (2013).
- ³⁹ Gormley, W., Gayer, T., Phillips, D., & Dawson, B. (2005). The Effects of Universal Pre-K on Cognitive Development. *Developmental Psychology*, 41, 872-884.; Gormley, W., Phillips, D., & Gayer, T. (2008). Preschool programs can boost school readiness. *Science*, 320, 1723-1724.; Hustedt, J., Barnett, W. S., Jung, K., & Figueras, A. (2008). *Impacts of New Mexico PreK on Children's School Readiness at Kindergarten Entry: Results from the Second Year of a Growing Initiative*. National Institute for Early Education Research, Rutgers University. Retrieved from: <http://nieer.org/resources/research/NewMexicoRDD0608.pdf>; Weiland, C., & Yoshikawa, H. (2013). Impacts of a prekindergarten program on children's mathematics, language, literacy, executive function, and emotional skills. *Child Development*, 84, 2112-2130.; Yoshikawa, H., Weiland, C., Brooks-Gunn, J., Burchinal, M. R., Espinosa, L. M., Gormley, W. T., ... Zaslow, M. J. (2013). *Investing in our Future: The Evidence Base for Preschool Education*. A Joint Brief from the Foundation for Child Development and the Society for Research in Child Development. <http://www.srcd.org/policy-media/policy-updates/meetings-briefings/investing-our-future-evidence-base-preschool>.
- ⁴⁰ Magnuson, K., & Waldfogel, J. (2005). Child care, early education, and racial/ethnic test score gaps at the beginning of school. *The Future of Children*, 15, 169-196.

**DEPARTMENT OF HEALTH
& HUMAN SERVICES**

Office of the Secretary
Washington, DC

OFFICIAL BUSINESS
Penalty for Private Use \$300

