Early Childhood Education and Inequality

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Motivation
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- Early emergence and persistence of achievement gaps
  - Average cognitive score of children in highest SES group is 60% higher than average score of lowest SES group prior to kindergarten entry (Lee & Burkam 2002)
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- Declining developmental plasticity (Knudsen et al. 2006, Shonkoff & Phillips 2000)
Figure 1: Mean school readiness scores in the ECLS-B (US) cohort at age 4, by income quintile ($N = 7950$).

Source: Waldfogel & Washbrook (2011)
Test scores in standard deviations

Parent income in the highest quartile

Parent income in the lowest quartile

Note: IQ scores are available through age 8. After age 8, math test scores are shown. A three year moving average is used for math scores.
Sources: 2013 U.S. Collaborative Perinatal Project (solid lines); NLSY79 Child and Young Adult Supplement (dashed lines).

Source: Council of Economic Advisers (2014)
Socioeconomic Gaps
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--> Early childhood as a critical period for intervention.
Early Childhood Interventions
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- Home visiting and parent education/engagement programs
  - Maternal, Infant, and Early Childhood Home Visiting (MIECHV) programs, established in 2010, to provide federal funds to states
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  ✧ Early Head Start
  ✧ Child Care subsidies (Child Care and Development Block Grants, TANF)
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  ✦ Head Start
  ✦ Dramatic expansions in public provision of pre-K over the last two decades
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- Kindergarten
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  - Which programs work? In what settings and contexts?
  - With what structural features?
  - With what processes, interactions, and quality features?
  - For which children?
  - As compared to what?
  - At scale?
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❖ A note about quality of evidence...
The Puzzle
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- There are both theoretical arguments why early childhood investments make sense and there are “existence proofs” of the important short- and long-term effects some programs have had on children's outcomes.
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- Unanswered questions remain about the effectiveness of specific interventions for certain populations in current contexts, and about the persistence of effects.
New Evidence
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- Studies to fill gaps in the existing research, and improve our understanding of the effectiveness of early childhood interventions and implications for inequality
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- Head Start
Impact of Full-day Kindergarten
Kindergarten Enrollment

Source: Census Bureau, CPS
The Kindergarten Experience

Full-day K Participation

Full-day K Participation

Research Question

Do students in full-day kindergarten programs outperform their half-day kindergarten peers as measured by literacy skills at the end of the kindergarten year?
Context
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- Dramatic expansions in full-day kindergarten availability
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- Legislation in Indiana in 2007 to expand full-day kindergarten in the state
- Some districts were not able to fund everyone who was interested and assigned oversubscribed slots by lottery
Impact Estimates

- All Students: 0.310
- Low Income/Not Low Income: 0.337
- Nonwhite/White: 0.523
- Hispanic/Not Hispanic: 0.665

Effect Size
Achievement Gaps

![Bar chart showing achievement gaps for different categories: Not Low Income - Low Income, White - Nonwhite, and Not Hispanic - Hispanic. The gaps are measured for full day and half day.]
Intergenerational Effects of Head Start
History of Head Start
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- At its inception, the OEO grant application emphasized “medical, cultural, and self-esteem or self-discovery activities.”

- Emphasis on community (including parent) involvement in all OEO activities, including Head Start
–LBJ, June 22, 1967
“Poverty defies simple description. It is a cycle which begins with an infancy of deprivation, continues in a youth of hopelessness, extends to a jobless adulthood, and finally ends—for those who survive—in a bleak and despairing old age. At every stage, the conditions of life are poor housing, inadequate education and training, deficient health care, and often, gnawing hunger.

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We knew that the Federal Government could not undertake alone the programs which would offer opportunity and encourage self-help. Initiative would have to come from, and responsibility be shared by, the communities in which poverty festered.

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The programs of the Office of Economic Opportunity are built upon these principles.”

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Early Head Start Participants
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*Source: U.S. Census Bureau*
Growth in Head Start Over Time

Source: U.S. Department of Health and Human Services
Head Start Today
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  - Health and nutrition
  - Parent involvement and community partnerships
  - Social and emotional development
  - Cognitive and academic skill development
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- Funding from the federal government goes directly to local grantees
  - Over 2,800 grantees operate more than 56,000 classrooms
Research Question

Do Head Start effects transfer across generations, i.e., do the children of Head Start participants experience improved longer-term outcomes?
Context
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- Ongoing debate about Head Start effectiveness
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- Evidence of long-term effects for participants in early childhood programming
  - Project STAR (Chetty et al. 2011, Dynarski et al. 2013)
  - Perry Preschool (Heckman et al. 2010, Schweinhart et al. 2005) and the Abecedarian Project (Campbell et al. 2014)
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  - Persistence of poverty
Existing Head Start Evidence

Educational Attainment Effects

- **High school completion**
  - *white children*
  - *black children*
  - *female children*

- **College going**

Percentage Point Increase
Data
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- Geo-coded NLSY79 data on respondents (born 1957-1964) who were asked in 1979 if they ever participated in Head Start
  - County and year of birth
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  - County and year of birth
- National Archives data on early Head Start rollout
  - Community Action Program (CAP) files, 1966-1968
  - Federal Outlays System (FOS) files, 1968-1980
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  - Federal Outlays System (FOS) files, 1968-1980

- CNLSY data on children’s long-term outcomes
Study Design
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- Leverage variation in exposure based on the timing and geography of program rollout
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- Compare siblings who differ in Head Start participation
Program Introduction
New Evidence from Program Introduction

Intergenerational Effects

Percentage Point Change

-20  -10   0    10    20

teen parent  crime  high school  some college

Grandmother <HS  Grandmother <=HS
New Evidence from Sibling Comparisons

Intergenerational Effects

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    - Hispanic students enjoy particularly large gains in full-day kindergarten; important for early schooling achievement gaps
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  - **Full-day kindergarten**
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    - Cost-effectiveness estimates suggest full-day kindergarten generates a larger return (0.07-0.21 s.d.) per $1000 of spending than other early childhood investments
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  - Cost-effectiveness estimates suggest full-day kindergarten generates a larger return (0.07-0.21 s.d.) per $1000 of spending than other early childhood investments
  - Policy caveat: students received full-day kindergarten in mixed-ability classrooms —> targeted versus universal
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- Intergenerational spillovers — an important consideration in assessing the program’s cost-effectiveness, and suggestive of disruption to the intergenerational persistence of poverty