Parenting Promotes Social Mobility Within and Across Generations

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Figure 1: Average Impact of Early Childcare Programs at End of Treatment



Source: ?.

Note: This figure shows the distribution of 84 program-average treatment effect sizes for cognitive and achievement outcomes, measured at the end of each program's treatment period, by the calendar year in which the program began. Reflecting their approximate contribution to weighted results, "bubble" sizes are proportional to the inverse of the squared standard error of the estimated program impact. There is a weighted regression line of the effect size by calendar year.

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A Framework for Interpreting Impacts of Policies Promoting Social Mobility

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- Following the literature, we use the technology of skill formation (Cunha and Heckman, 2007) to organize ideas and interpret evidence.
- At age α , \mathbf{S}_{α} , enhances the productivity of other investments.
- The stock of skills at age $\alpha + 1$ is generated by the following relationship

$$\mathbf{S}_{\alpha+1} = \mathbf{F}^{(\alpha)} \left(\mathbf{S}_{\alpha}, \mathbf{I}_{\alpha}, \mathbf{N}_{\alpha}, \mathbf{P}_{\alpha}, \mathbf{G}_{\alpha} \right).$$
 (1)

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• The technology is often joined with a model of measurements of skills:

$$oldsymbol{M}_{lpha}=\Phi^{lpha}\left(oldsymbol{S}_{lpha},oldsymbol{ au}_{lpha}
ight),$$
 (2)

where $\boldsymbol{\tau}_{\alpha}$ are other factors that explain measurements \boldsymbol{M}_{α} .

• Behaviors, \boldsymbol{B}_{α} (e.g., attending school, showing up on time), depend on skills and incentives, \boldsymbol{R}_{α} :

$$oldsymbol{B}_{a}=\Psi^{a}\left(oldsymbol{S}_{a},oldsymbol{E}_{a}\left(oldsymbol{R}_{a}
ight)
ight),$$
 (3)

where \mathbf{E}_{α} are factors like effort that affect behaviors and are affected by incentives (e.g., desire to please).

- One can think of behaviors as a special class of measurements because they are manifestations of S_{α} , among other factors.
- Systems (2) and (3) facilitate comparisons of outcomes and behaviors across environments.
- Conditioning on τ_{α} and $\boldsymbol{E}_{\alpha}(\boldsymbol{R}_{\alpha})$ allows for meaningful comparisons across individuals, studies, and time.

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Two Early Childhood Education Programs that Promote Social Mobility

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Table 1: Baseline Characteristics, Outcomes, and Fertility: Original Participants of Perry and ABC

	Perry			ABC		
	Control Mean	Mean Difference (MD)	MD p-value	Control Mean	Mean Difference (MD)	MD p-value
Panel a. Baseline						
IQ (Perry) or Mother's IQ (ABC)	78.54	1.03	0.387	83.49	1.83	0.399
Socioeconomic Index	8.62	0.17	0.530	21.82	-1.93	0.089
Mother Does not Work¶	0.69	0.22	0.002	0.39	-0.22	0.010
Mother's Year of Birth	1959.97	0.03	0.950	1974-35	-0.15	0.674
Panel b. Midlife Skills [†]						
Cognitive	0.00	0.48	0.005	0.00	0.34	0.031
Non-Cognitive	0.00	0.50	0.011	0.00	0.47	0.031
Panel c. Midlife Education						
High-School Graduate	0.52	0.20	0.021	0.53	0.20	0.025
College Graduate	0.05	0.02	0.453	0.09	0.21	0.007
Panel d. Midlife Outcomes						
Married	0.25	0.09	0.082	0.42	0.01	0.486
Labor Income (2021 USD)	16,298.91	7,826.94	0.018	37,527.95	13,044.70	0.098
Household Labor Income (2021 USD)	25,121.43	13,243.21	0.007	37,247.62	14,632.67	0.071
Accumulated Days (Perry) or Times (ABC) in Jail or Prison	1,326.71	-380.83	0.237	0.14	-0.12	0.027
Never Arrested (Perry) or Accumulated Arrests (ABC)	0.46	0.18	0.039	0.61	0.26	0.151
Physical Health	0.00	-0.02	0.553	0.00	0.28	0.096
Mental Health	0.00	0.31	0.072	0.00	0.20	0.111
Panel e. Midlife Fertility [†]						
Any Children	0.80	-0.01	0.878	0.89	-0.03	0.748
Age at Onset	22.63	0.87	0.469	21.93	2.23	0.122
Number of Children	2.42	0.15	0.727	2.31	-0.19	0.524
> 5 Children	0.07	0.02	0.727	0.00	0.02	0.928
Panel f. Sample Sizes						
Original Participants at Baseline	65	-7		57	2	
Original Participants at Midlife Follow-up	50	2		45	6	

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Figure 2: Parenting Received by the Original Participants of the Perry and ABC



Note: Panel (a) shows the probability density function of a latent variable describing the parental investment (parenting) received by the original participants of the Perry Preschool Project (Perry) by treatment status. We also display the control-group mean and the treatment-control mean difference in the index together with the permutation *p*-value for this difference. The null hypothesis for the difference is that it is less than or equal to o. Panel (b) is analogous in format to Panel (a) for the parental investment received by the original participants of the Carolina Abecedarian Project (ABC).

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Figure 3: Parenting Received by the Original Participants of Perry and ABC and their Adult Skills

(a) Midlife Skills and Parenting, Perry (b) Midlife Skills and Parenting, ABC



Note: Panel (a) displays the linear relationship between the latent variable of parental investment received by the original participants of the Perry Preschool Project summarized in Figure ?? and an average of their midlife cognitive and non-cognitive skills measured at age 54, together with the corresponding description of the linear-regression. Panel (b) is analogous in format to Panel (a) for the original participants of Carolina Abecedarian Project, whose midlife skills are measured at age 45. The number of bins in the scatterplots is calculated using the procedure in ?.

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Figure 4: Decomposition of Treatment Effect on Midlife Skills into Treatment Effects on Parenting Received and Early-Life Skills, Perry



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Table 2: Definitions of Welfare Indicators

	Male Children			Female Children		
	Control Mean	Mean Difference (MD)	MD p-value	Control Mean	Mean Difference (MD)	MD p-value
Panel a. Perry						
High School Graduate (Age 18 or older)	0.67	-0.01	0.582	0.74	0.13	0.026
College Graduate (Age 23 or older)	0.04	0.08	0.063	0.31	-0.09	0.846
Employed (Age 23 or older)	0.48	0.19	0.040	0.41	0.09	0.218
Never Arrested (Age 18 or older)	0.37	0.14	0.089	0.78	0.06	0.210
In Good Health (Age 18 or older)	0.82	0.12	0.006	0.85	0.10	0.030
Not a Parent (Ages 14 to 22)	1.00	0.00	1.000	0.83	0.12	0.234
Never Divorced (Age 23 or older)	0.93	0.07	0.028	0.86	0.11	0.016
Panel b. ABC						
High School Graduate (Age 18 or older)	0.66	-0.06	0.718	0.28	0.18	0.067
College Graduate (Age 23 or older)	0.55	-0.08	0.683	0.18	0.25	0.068
Not Idle (Age 15 or older) [†]	0.91	0.06	0.083	0.98	0.00	0.572
In Good Health (Age 18 or older)	0.83	0.18	0.000	0.88	0.10	0.133
Not a Parent (Ages 14 to 22)	0.63	0.17	0.069	0.94	-0.01	0.584

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Figure 5: Original-Participant Marriage, Earnings, and Crime by their Age and by their Children's Age, Perry [1]



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Figure 6: Original-Participant Marriage, Earnings, and Crime by their Age and by their Children's Age, Perry [1], Cont'd

(c) Cumulative Arrests, by Participant's Age



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Figure 7: Original-Participant Marriage, Earnings, and Crime by their Age and by their Children's Age, Perry [2]



Figure 7: Original-Participant Marriage, Earnings, and Crime by their Age and by their Children's Age, Perry [2], Cont'd



(c) Cumulative Arrests, by Child's Age

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Figure 8: Intergenerational Outcome Relationships, Perry and Preparing for Life



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	Perry	ABC
Benefits		
Parental Income	N/A	133,326
Education	303	-5,151
Labor Income	68,348	146,672
Crime	88,065	513,420
Health	54,048	63,794
Other	N/A	-21,408
Costs		
Total Program Cost	23,478	105,530
Net Social Benefit (Benefits Less Costs)		
Baseline Program Cost	187,287	725,124
Subtract Deadweight Loss	175,548	672,359
Benefit-Cost Ratio		
Baseline Program Cost	9.0	7.9
Subtract Deadweight Loss	6.0	5.2

Table 3: Summary of Benefit-Cost Analysis of the Perry and ABC

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A Targeted National Implementation of Policies that Promote Social Mobility

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Figure 9: Gaps in Annual Earnings from Labor Income After National Implementations of Perry and ABC





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Isolating Components of Programs that Successfully Promote Social Mobility

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Table 4: Features of Omnibus and Original Home-Visiting Programs

Perry ABC Setting Ypsilanti, Michigan Chapel Hill, North Carolina Year of program start 1962 1972 Annual cost per child participant 6.3ca (box) USD) 21.0c6 (box) USD) Sample at baseline 66 (corrol, 58 treatment) 56 corrol, 56 treatment Socioeconomic characteristics of participant 8.3ca (box) USD) 21.0c6 (box) USD) Socioeconomic characteristics of participant 9.3ca (box) USD) 21.0c6 (box) USD) Child age at start of program 2 years 0 (program started at kirth) Program duration 2 years 5 years 6 (box) visits were implemented. Education of home visitors College or teaching degree No visits were implemented. 1 in childcare centers were a of HS graduates and educat certified staff. Experience required for home visitors Most staff had certification or experiment in childcare centers 2 present in childcare centers Education of mothers at baseline Most mathers did not have high Most mothers did not have high Most mothers did not have high	Jamaica Preparing for Life Poor neighborhoods in Kingston. Disadvantaged neighborhoods. jamaica Dublinlealand j696-1967 2008 909 (2007) 2008 909 (2007) 2008 909 (2007) 2008 909 (2007) 2038 (2007) 909 (2007) 2038 (2007) 909 (2007) 2038 (2007) 909 (2007) 100 control, 105 transment 909 (2007) 100 control, 105 transment 900 (2007) 100 control, 105 transment 900 (2007) 2008 900 (2007) 2008 (2007) 900 (2007) 2008 (2007) 900 (2007) 2008 (2007) 900 (2007) 2008 (2007) 900 (2007) 2008 (2007) 900 (2007) 90 (2007) 900 (2007) 90 (2007) 900 (2007) 90 (2007) 900 (2007) 90 (2007) 900 (2007) 90 (2007) 900 (2007) 90 (2007) 900 (2007) 90 (2007) 900 (200
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Education of mothers at baseline Most mothers did not have high Most mothers did not have a school completed	ing six months.
school completed school completed	high Only 24% had more than 9 years of Relatively low; 30% had less thar
School completed School completed	education years
Frequency of home visits Weekly during the school year; No visits were implemented	Weekly; one-hour per session Fortnightly; one-hour per sessio
one-hour per session	
Panel b. Home-Environment Measures	
Child age at measurement 0.5 to 4.5 3 to 5 Measures available Parental Attitude Research Instru- HOME Inventory	Not available 3, 5, and 9 Age 3: HOME inventory; Age
ment	home learning-environment ind
	Age 9: parent-involvement inde
Panel c. Very Early-Life Skill Measures	
Child age at measurement 5 5	3 to 4 3 and 5
Measures available Cognition: Stanford-Binet IQ Test; Cognition: Stanford-Binet IQ	Test; Cognitive: Griffith Mental Devel- Cognitive (5): BAS (spatial, p
Non-cognitive: not available Non-cognitive: not available	opment Scale (performance scale) torial, verbal sections) . No
• • • • • • • • • • • • • • • • • • • •	• • • Non-Cognitive: not available • • • • Cognitive (3•and•5): «internalizi
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Table 5: Features and Available Skill Measures for Home-Visiting Programs Patterned after Jamaica

	ChinaReach	China	Colombia	India
Panel a. Features				
Setting	Villages in Huachi County of	Villages Shaanxi, China	Semi-urban municipalities in cen-	Urban disadvantaged neighbor-
	Gansu, China		tral Colombia	hoods in Cuttack County of Odisha,
				India
Year of program start	2015	2014	2010	2013
Annual cost per child participant	602 (2021 USD)	Not available	380 (2021 USD)	175 (2021 USD)
Sample at baseline	852 control; 715 treatment	296 control; 212 treatment	626 control; 635 treatment	212 control; 209 treatment
Socioeconomic characteristics of participants	Generally disadvantaged; > 70%	Generally disadvantaged; ~26%	Eligible for a social programs tar-	Generally disadvantaged; \sim 50% of
	of household participants living in	participant households qualified	geting households belonging to the	participant households below the
	cave dwelling	for minimum-living standards	poorest 20% in the population	poverty line
		social program		
Child age at start of program	0 to 20 months	18 to 30 months	12 to 24 months	10 to 20 months
Program duration	~22 months	6 months	18 months	18 months
Education of home visitors	10 years (average)	Most completed at least commu-	8.5 years (average)	26% did not have high-school; 74%
		nity college; 29% completed college		had at least high-school
Experience required for home visitors	None	None	None	None
Education of mothers at baseline	10 years (average)	${\sim}27\%$ had less than 9 years of edu-	7.5 years (average)	6.7 years control (average); 8.1 years
		cation; \sim 73% had more than 9 years		treatment (average)
		of education or more		
Frequency of home visits	Weekly; one-hour per session	Weekly; one-hour per session	Weekly; one-hour per session	Weekly; one-hour per session
Panel b. Home-Environment Measures				
Child age at measurement	2 to 3.5	2 to 3.5	2.5 to 3.5	1.5 to 3
Measures available	HOME inventory	Items similar to those observed in	Items similar to those observed in	Items similar to those observed in
		the HOME inventory	the HOME inventory, classified as	the HOME inventory
			either time or material resources	
Panel c. Very Early-Life Skill Measures				
Child age at measurement	2 to 3.5	2 to 3.5	2.5 to 3.5	1.5 to 3
Measures available	Cognitive: Denver Developmental	Cognitive: Bayley Mental Develop-	Cognitive: Bayley Mental Devel-	Cognitive: Bayley Mental Devel-
	Screening Test (language and cog-	mental Index (cognitive section) for	opmental Index (cognitive section).	opmental Index (cognitive section).
	nition sections). Non-cognitive:	cohort 1; Griffith Mental Develop-	Non-cognitive: IQQ and ECBQ in-	Non-Cognitive: not available
	Denver Developmental Screening	ment Scale (performance scale) for	ventories	
	lest (socio-emotional section)	conort 2. Non-cognitive: ASQ so-		
		 ciar problems inventory for both co- 		

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Figure 10: Impacts on the Home Environment and Very Early-Life Skills, Omnibus and Home-Visiting Programs

Figure 10: Impacts on the Home Environment and Very Early-Life Skills, Omnibus and Home-Visiting Programs, Cont'd

(c) Non-Cognitive Skills

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Figure 11: Impacts on Early-Life Skills and Achievement, Omnibus and Home-Visiting Programs

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Figure 11: Impacts on Early-Life Skills and Achievement, Omnibus and Home-Visiting Programs, Cont'd

(c) Mathematics

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Table 6: Available Adult Skill Measures and Outcomes for Omnibus andOriginal Home-Visiting Programs

	Omnibus	Programs	Pioneering Home-Visiting Programs		
	Perry	ABC	Jamaica	Preparing for Life	
Panel a. Achievement Me	asures				
Child age at measurement Measures available	7 to 9 and 10 to 14 California Achievement Test (read- ing and math sections)	7 to 9, 12, 15, 21 Woodcock Johnson Test (reading and math sections)	7 to 9, 11 to 12, 17 to 18, and 22 Wide Range Achievement Test (reading and math sections)	9 Reading and math achievement in- ventories	
Panel b. Adult Skill Measu	ires				
Child age at measurement Measures available	54 Cognition: Raven and Stroop Tests combined items. Non-cognitive: inventories of positive personality, including conscientiousness	21 and 45 Cognition: Wechsler Adult Intel- ligence Scale (21) and Raven and Stroop Tests combined items (45). Non-cognitive: inventories of pos- itive personality, including consci- entiousness (45)	17, 22, and 31 Cognitive: Wechsler Adult Intelli- gence Scale Q Test, Non-cognitive: Conscientiousness inventory	Not available	
Panel c. Adult Outcomes (Dbserved				
Child age at measurement Measures available	210 40 Education (40): years of education. Employment (40): employed in any job at age 22, employed in high- skill job at age 31. Violence (21-40): reverse-coded variables indicating engagement in fights and other vio- lent behaviors. Alcohol/Marijuan (1-40): reverse-coded variables de- scribing frequency and intensity of alcohol/marijuana use	210 40 Education (90): years of education. Employment (90): employed in any job at age 22, employed in high- skill job at age 32. Violence (12-30): reverse-coded variables indicating engagement in fights and other vio- lent behaviors. Alcohol/Marijuan (21-30): reverse-coded variables de- scribing frequency and intensity of alcohol/marijuana use	22 and 31 Education (33) years of education. Employment: employed in any job at age 22; employed in high-skill job at age 31. Violence (31), reverse- coded variables indicating engage- ment in fights and other violent be- haviors. Alcohol/Marijuana (31), reverses-coded variables describing frequency and intensity of alco- hol/marijuana use	Not available	

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Figure 12: Impacts on Adult Skills and Outcomes for Omnibus Programs and Jamaica

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