

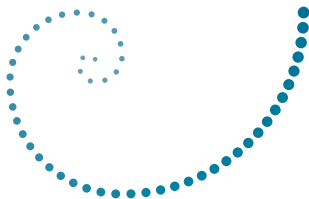
# Creating Flourishing Lives: The Dynamics of Capability Formation

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Amartya Sen Lecture

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CENTER FOR THE ECONOMICS  
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HUMAN CAPITAL AND  
ECONOMIC OPPORTUNITY  
GLOBAL WORKING GROUP

# Institute for **New Economic Thinking**

## Core Message

# The Argument

## The importance of the early years: Skills beget skills

# **Eight Lessons from the Recent Literature on Creating Skills**

# 1. Multiple Skills



## 2. Gaps in Skills

### **3. Dynamics of Skill Formation: Skills Can Be Created by Investment**

## 4. Critical and Sensitive Periods in the Technology of Skill Formation

## 5. Family Investments

**The True Measure of Child Poverty is Not Money:  
It is Parenting**

## 6. Adaptation to Change: Resilience and Recovery

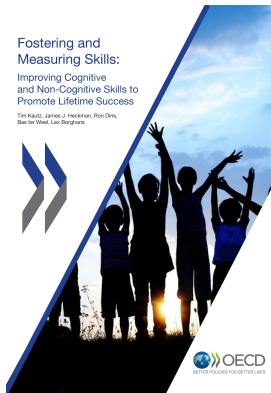
## **7. Parent-child/Mentor-child Interactions and Relationships Play Key Roles in Promoting Child Learning**

## 8. Substantial Benefits of Early Investment



# The Importance of Cognitive, Character, Health and Ability to Use Practical Reason

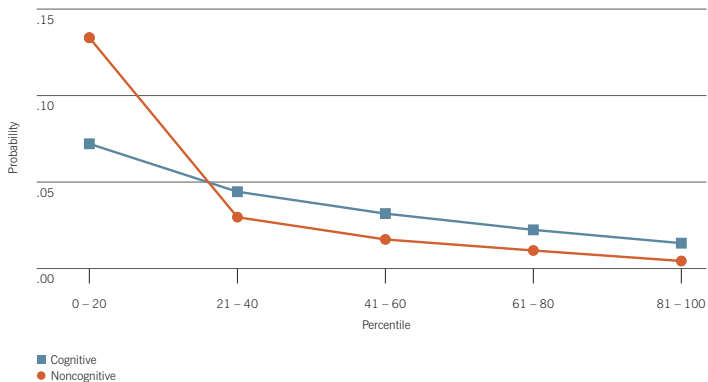
**James J. Heckman, Tim Kautz, Ron Diris,  
Bas ter Weel, and Lex Borghans  
Fostering and Measuring Skills:  
Improving Cognitive and Noncognitive Skills to Promote Lifetime Success  
OECD, 2014**



<http://tinyurl.com/lqnvb6w>



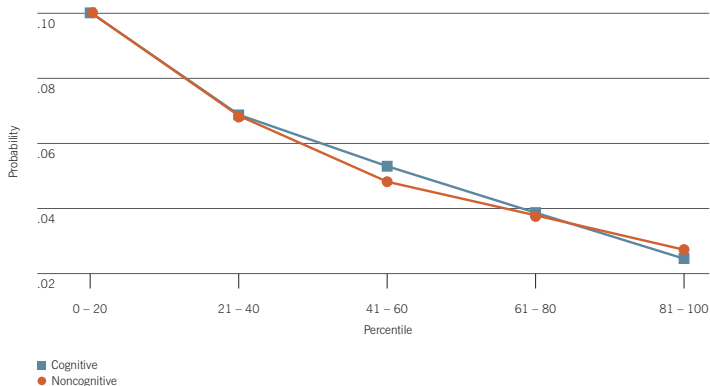
## Ever been in jail by age 30, by ability (males)



*Note:* This figure plots the probability of a given behavior associated with moving up in one ability distribution for someone after integrating out the other distribution. For example, the lines with markers show the effect of increasing noncognitive ability after integrating the cognitive ability.

*Source:* Heckman, Stixrud, and Urzua (2006).

## Probability of being single with children



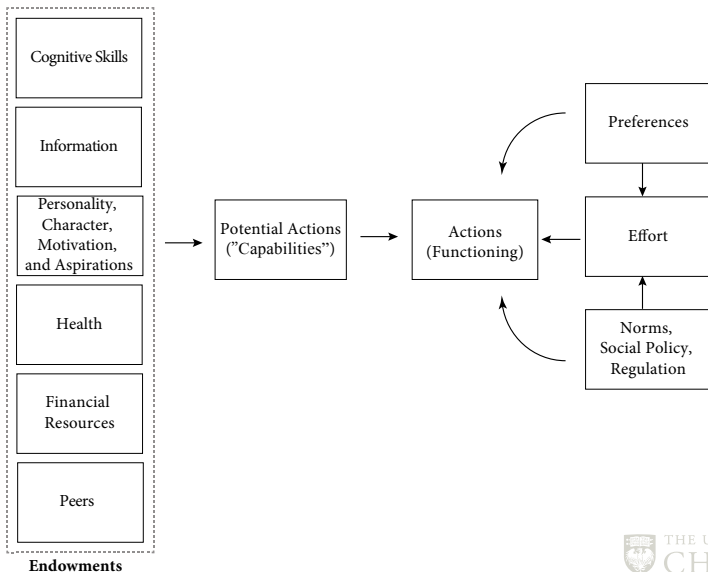
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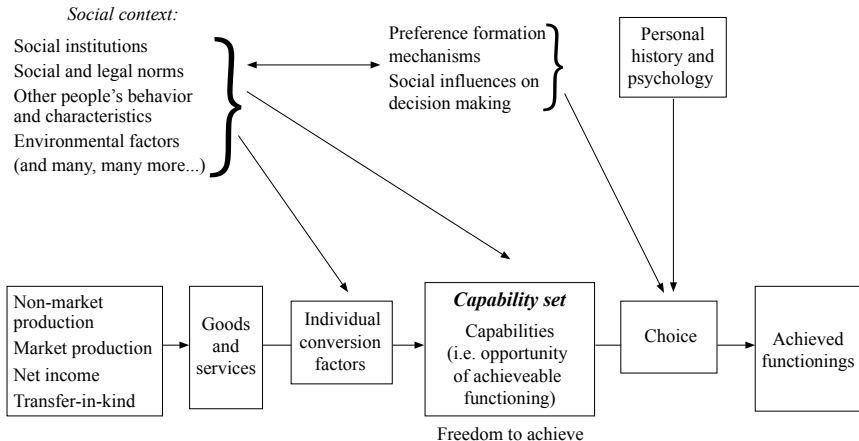
*Source:* Heckman, Stixrud, and Urzua (2006).

- **Similar pattern for many other outcomes using the same set of proxied skills:**
  - ❶ Self reported health
  - ❷ Voting
  - ❸ Trust
  - ❹ Employment
  - ❺ Wages
  - ❻ Participation in welfare
  - ❼ Depression
  - ❽ Self-esteem
  - ❾ Incarceration
  - ❿ Health-related work limitations
  - ⓫ Smoking
  - ⓬ White-collar employment

# The Challenge of Measurement

# Figure 1: Multiple Determinants of Actions



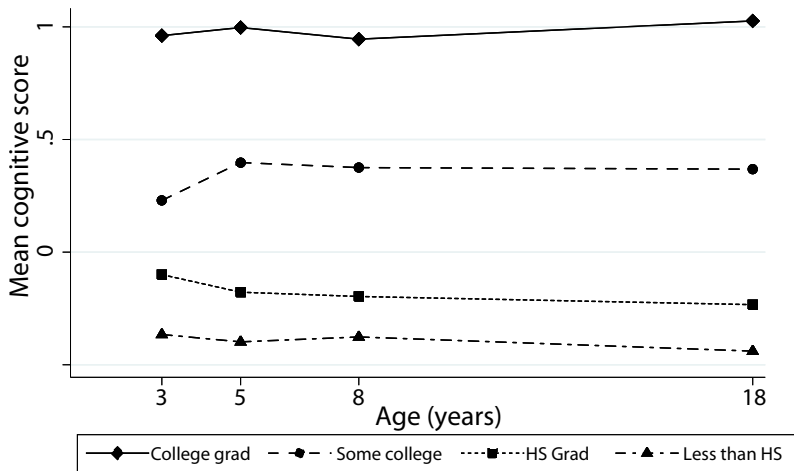


Source: Robeyns (2005).



## Gaps in Skills Open Up Very Early

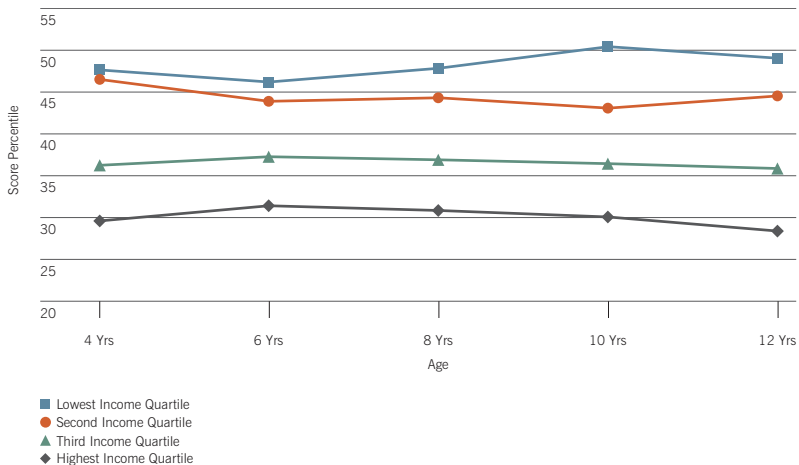
**Figure 2:** Mean Achievement Test Scores by Age by Maternal Education



Each score standardized within observed sample. Using all observations and assuming data missing at random.

Source: Brooks-Gunn et al. (2006).

## Average percentile rank on anti-social behavior score, by income quartile



# **Crucial Role of Mentoring and Mothering: Family and Parent-Child Interactions**

Children enter school with “meaningful differences” in vocabulary knowledge.

## 1. Emergence of the Problem

In a typical hour, the average child hears:

| Family Status | Actual Differences in <u>Quantity</u> of Words Heard | Actual Differences in <u>Quality</u> of Words Heard |
|---------------|--|---|
| Welfare       | 616 words  | 5 affirmatives, 11 prohibitions                     |
| Working Class | 1,251 words  | 12 affirmatives, 7 prohibitions                     |
| Professional  | 2,153 words  | 32 affirmatives, 5 prohibitions                     |

## 2. Cumulative Vocabulary at Age 3

| Cumulative Vocabulary at Age 3        |             |
|---------------------------------------|-------------|
| Children from welfare families:       | 500 words   |
| Children from working class families: | 700 words   |
| Children from professional families:  | 1,100 words |

**The family is under stress around the world.**

## How Skills Are Created

### The Dynamics of Skill Formation: Skills Beget Skills

## **Synergisms: Skills Enhance Each Other**



**Social-emotional Skills**



**Cognitive Skills, Health**

*(sit still; pay attention; engage in learning; open to experience)*

**Health**



**Cognitive Skills, Socio-emotional Skills**

*(fewer lost school days; ability to concentrate)*

**Cognitive Skills**

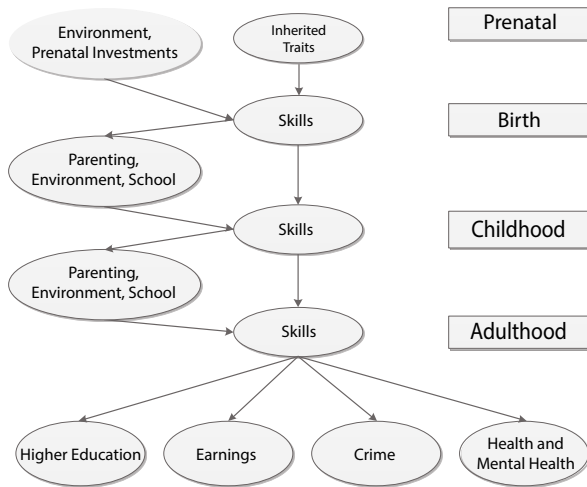


**Produce better health practices; produce more motivation; greater perception of rewards; greater self control.**

*(child better understands and controls its environment)*

**Outcomes: increased productivity, higher income, better health, more family investment, upward mobility, reduced social costs.**

**Figure 4: Technology of Skill Formation**



## Critical and Sensitive Periods

## **Static complementarity:**

- Having higher level of a skill boosts productivity of other skills in investment and performance

Leads to a version of the **Matthew effect**:

- Equal treatment leads to enhanced differences

## Dynamic complementarity:

- Investing today boosts the skill base for tomorrow
- Makes it more productive to benefit from investment tomorrow

## Dynamic Complementarity Increases with Age

- Harder and harder to remediate deficits at older ages

- Building the early skill base can be an economically efficient strategy: Building complementarity by investing in the disadvantaged is an economically efficient and socially fair policy



**Wait for Problems to Appear?**

# Resilience

**Many later remediation efforts targeted to the less able are costly and often ineffective.**

- **Effective programs recognize the age-related malleability of cognitive, non-cognitive and health skills**

## What is “investment”?

- Mentoring, emotional support, scaffolding

- **Effective policies for adolescents provide mentoring and integrate schooling and work.**

**The core of effective mentoring is a version of effective parenting: attachment, interaction, and trust. Effective policies focus on developing social and emotional skills, teaching conscientiousness.**

**Workplace-based intervention shape noncognitive skills and motivate adolescents to learn.**



**Vocational education produces valuable intermediate skills.**

## **Scaffolding, Parenting, Attachment, Mentoring:**

- **Universal Ingredients of Successful Skill Interventions**

## **Fragmented Solutions Often Miss Policy Opportunities**

## Examples of Fragmented Solutions

- To promote skills, build more schools, hire better teachers, and spend more on textbooks.
- For crime, have more police.
- For health, have more doctors and medical facilities. Promote nutrition: micro- and macronutrients.
- For teenage pregnancy, conduct pregnancy prevention programs.
- To reduce inequality, give cash transfers and promote housing programs for the poor.

- More police reduce crime, but a more cost-effective strategy is to promote secondary school graduation (Lochner and Moretti).

**Another example of a fragmented approach to policy is the traditional approach to inequality: “redistribution.”**

# Vision of Conflict: Equity vs. Efficiency Trade-off

# **A Skill Investment Strategy Promotes Productivity and Reduces Inequality**



- **No necessary conflict between promoting social mobility and opportunity and enhancing society-wide productivity**

# *Predistribution* of skills not just Redistribution

- Giving people autonomy, agency, and dignity

**Preventing problems before they occur**

- **Creating flourishing lives—not remediating earlier failures**

## Some Examples

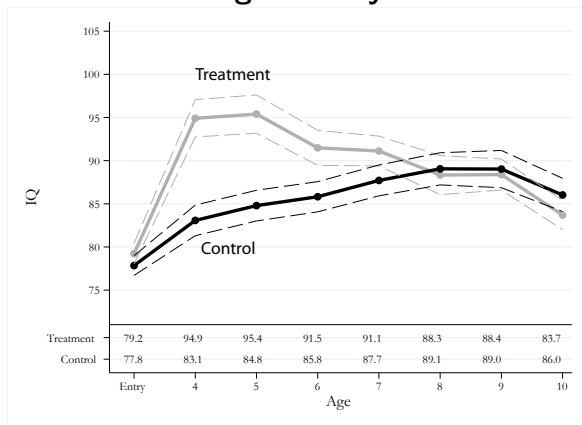
## Perry Preschool Project

- The Perry Preschool Project enriched the lives of low income black children with initial IQs below 85 at age 3.
  - $2\frac{1}{2}$  hours per day of center-based education
  - 5 days per week
  - 2 years during each school year (mid-October to May).
  - program stopped after two years
- Teachers also made afternoon home visits to parents for one hour per week.

- Did *not* lead to sustained gains in IQ for males.
- Yet has a statistically significant rate of return of around 6.2-9% per annum—for both boys and girls—above the post World War II stock market returns to equity in U.S. labor market estimated to be 5.8%.
- The Perry Preschool Project worked primarily through **noncognitive** channels.



## Male Cognitive Dynamics

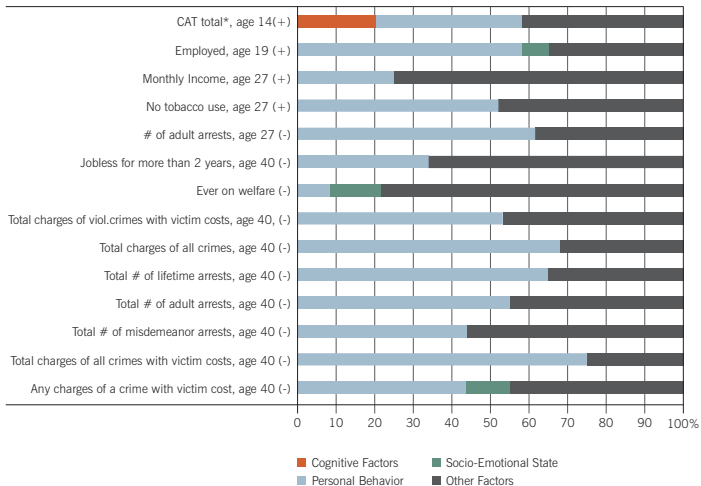


- Note similarity to Head Start fade out

Perry Program has a statistically significant annual rate of return of around 6%–10% per annum—for both boys and girls—in the range of the post–World War II stock market returns to equity in the U.S. labor market, estimated to be 6.9%.

- It worked primarily through noncognitive and character channels.

# Decomposition of Treatment Effects, Males



## The Carolina Abecedarian Project

- **Where & When:**

- North Carolina, U.S, from the early 1970s to early 1980s.
- Early intervention starting in the first months of life.

- **What:**

- Full-day enriched center-based childcare (9 hours/day, 5 days/wk, 50 weeks/yr) for 5 years at age 0-5. Provided cognitive stimulation and education for developing self-control and social skills.
- Bi-weekly home visits with individualized tutoring for 3 years at age 6-8 (but not during early childhood).
- Health care (well-child checkups and ill-child medical care) was provided to the children attending the center-based program.

## The Carolina Abecedarian Project: Results

# Understanding How Interventions Shape Family Life



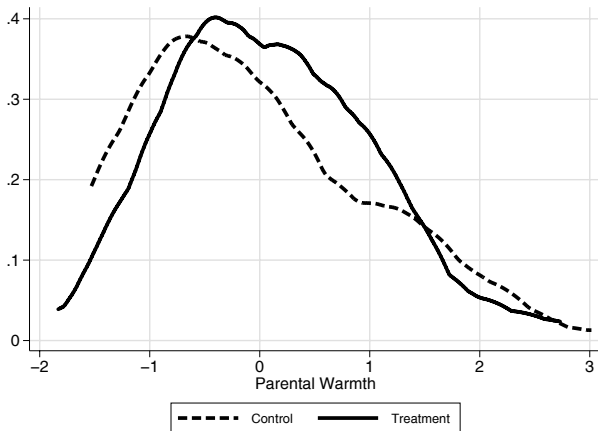
# Supplementing and Bolstering Family Life Attachment and Engagement: Toward a Deeper Understanding of Parenting and Learning

- In both Perry and ABC (and many other interventions) a main channel of influence is on parent-child interactions.
- Supplementing family life.
- Scaffolding the child.
- Training the child—instilling values & motivation.
- Consistent with Aristotle's notion of building good habits (virtue) through practice (*Nicomachean Ethics*, Book II).
- Enhanced *attachment* and *engagement* of parents.
- This has important implications for how we model family influence.

## Mechanisms—producing effects

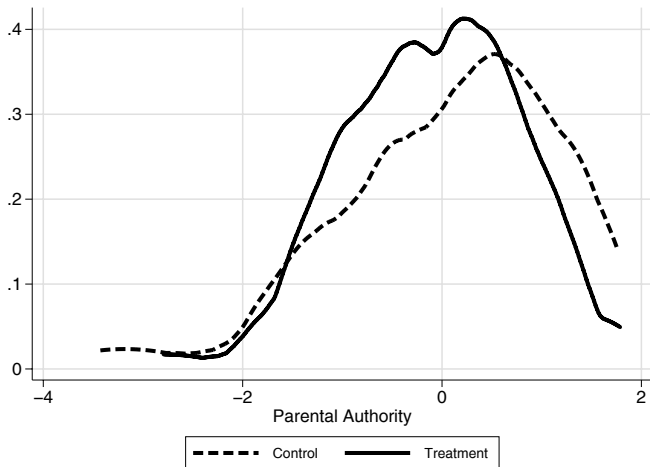
- Information
- Changing **preferences** of parents
- Parental response to child's curiosity and interest induced by participation in the program

Figure 6: Parental Warmth, Perry Preschool



Note: This figure presents the densities –pooled and by treatment status– for a single factor summarizing a set of questions in the Perry questionnaire attempting to measure how much affection the child gets from the parent(s).

Figure 7: Parental Authoritarianism, Perry Preschool



Note: This figure presents the densities –pooled and by treatment status– for a single factor summarizing a set of questions in OF the Perry questionnaire attempting to measure how much affection the child gets from the parent(s).

**The Jamaica Study:  
Grantham-McGregor et al.  
(Science, 2014)**

John Dewey:

*“Successful schools do what successful parents do”*  
—Dewey (1916)

Recent analyses would change this paraphrase to:

*“Successful interventions in skills across the life cycle do what successful parents and mentors do”*

# Education

- Boosting the capabilities of children **entering** school boosts the benefits of education for them.



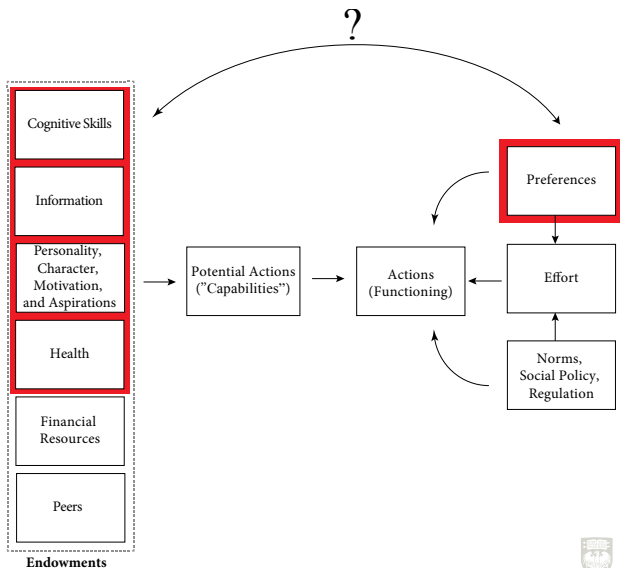
**Early development is as important as education in promoting wages, employment, and health.**

# Beneficial Causal Outcomes of Education at Different Stages

- 1 Self reported health
- 2 Voting
- 3 Trust
- 4 Employment
- 5 Wages
- 6 Participation in welfare
- 7 Depression
- 8 Self-esteem
- 9 Incarceration
- 10 Health related work limitations
- 11 Smoking
- 12 White-collar employment

## Open Issues and Questions for the Audience

**Figure 8: Multiple Determinants of Actions**



## Summary