

# Creating Capabilities

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RIETI  
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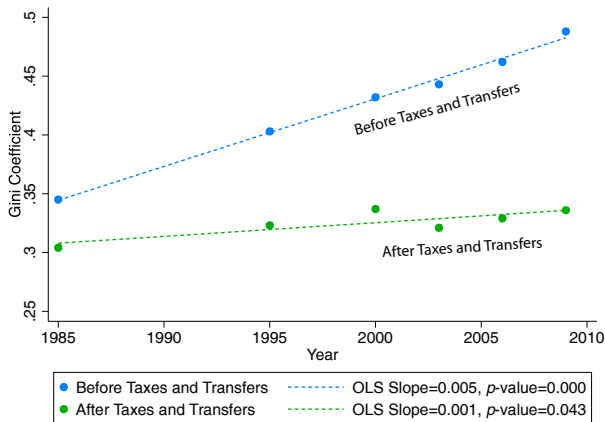


The Human Capital and Economic Opportunity Global Working Group



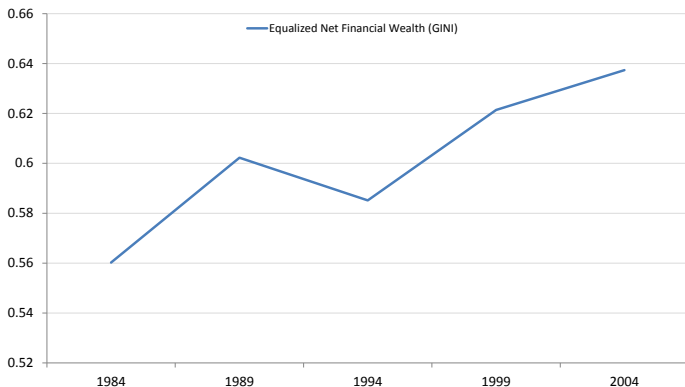
# Institute for New Economic Thinking

Figure 1: Trends in Family Income Inequality in Japan



Source: Bradley J. Setzler (2014)

## Measures of Wealth Inequality (NSFIE)

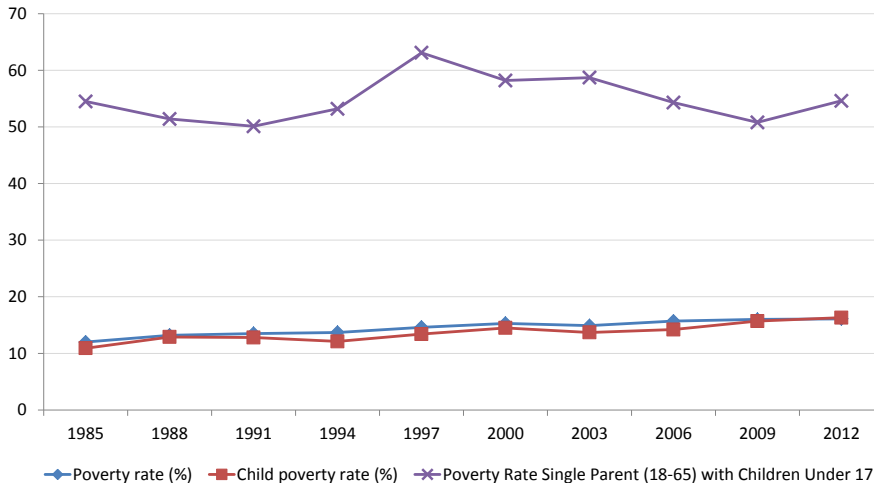


Source: Lise et al., 2014  
Data: National Survey of Family Income and Expenditure (NSFIE)

Source: Lise et al., 2010



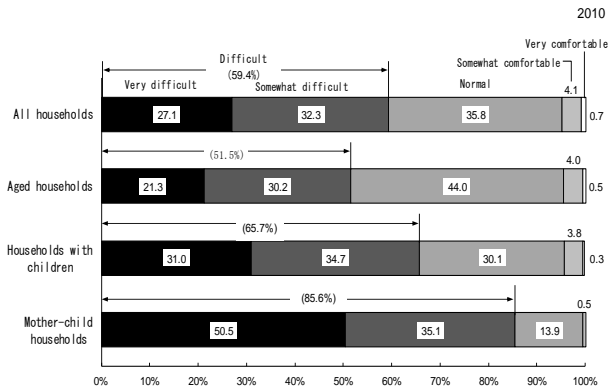
## Poverty Rates in Japan



Source: Comprehensive Survey of Living Conditions

Note: Poverty rate is calculated according to OECD guideline (The poverty rate is the ratio of the number of people who fall below the poverty line and the total population; the poverty line is here taken as half the median household income)

**Figure 2:** Percentage distribution of the number of Japanese households by self-assessed living-conditions, for all the households and specific households; 2010



Source From Ministry of Health, Labour, and Welfare.

## A Basic Fact on Gender Inequality in Hourly Wage in Japan

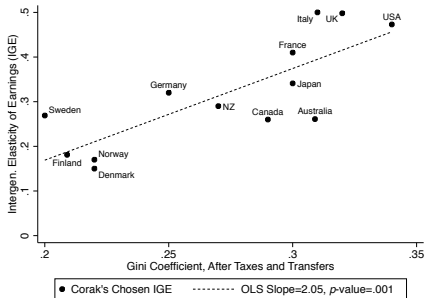
**Table 1:** Gender Inequality in Employment Status and Hourly Wage (2006 Wage Census in Japan)

		Fulltime regular	Fulltime irregular	Parttime regular	Parttime irregular	Total(prop.) Mean(wage)
Proportion of Employees	Men	0.840	0.075	0.003	0.082	1.000
	Women	0.474	0.146	0.009	0.371	1.000
Hourly wage (in yen)	Men	2,094	1,324	1,342	1,059	1,949
	Women	1,462	1,041	1,068	939	1,203
Wage Ratio (W/M)		0.698	0.786	0.796	0.887	0.617

**Source** Yamaguchi (2014).

# Intergenerational Mobility and Inequality: The “Gatsby Curve”

$$\text{IGE: } \underbrace{\ln Y_1}_{\text{Income in current generation}} = \alpha + \beta \underbrace{\ln Y_0}_{\text{Income of parents}} + \varepsilon$$

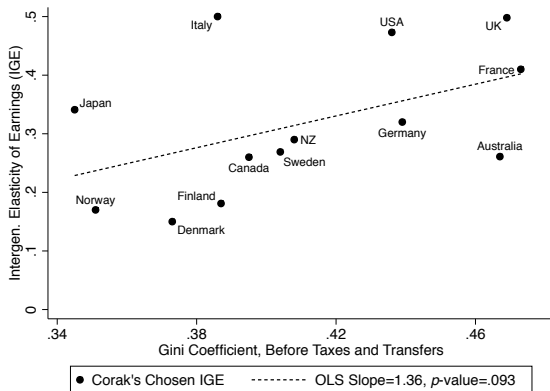


Source: Bradley J. Setzler (2014)

## Note:

- Inequality is measured **after taxes and transfers**.
- Gini index defined on **household income**.
- IGE measured by **pre-tax and transfer** income of **individual** fathers and sons.

Figure 3: Changing to Pretax Family Income



**The traditional approach to inequality is “alms to the poor”  
or “redistribution.”**

## Skills are Major Determinants of Inequality

- **A Strategy Based on Creating Capabilities: Capabilities are “Capacities” or “Skills”**
- **Capabilities: The Capacities to Act and to Create Future Capacities**



**Capabilities are defined as the *real freedoms* people have to achieve and the beings and doings that they value and have reason to value**

Sen, 1979, 1985, 1992; Nussbaum and Sen, 1993.

# **Eight Broad Lessons from the Recent Research Literature on Creating Capabilities**

## 1. Multiple Skills

Multiple skills vitally affect performance in life across a variety of dimensions. A large body of evidence shows that cognitive and noncognitive skills affect labor market outcomes, the likelihood of marrying and divorcing, the likelihood of receiving welfare, voting, and health.

## 2. Gaps in Skills

Gaps in skills between individuals and across socioeconomic groups open up at early ages for both cognitive and noncognitive skills. Many measures show near-parallelism during the school years across children of parents from different socioeconomic backgrounds, even though schooling quality is very unequal.

### 3. Capabilities Can Be Created by Investment

The early emergence of skill gaps might be interpreted as the manifestation of genetics: Smart parents earn more, achieve more, and have smarter children. A body of strong experimental evidence shows the powerful role of parenting and environments, including mentors and teachers in shaping skills.

Genes are important, but skills are not solely genetically determined. The role of heritability is exaggerated in many studies and in popular discussions. Genes need sufficiently rich environments to fully express themselves. There is mounting evidence that gene expression is itself mediated by environments. Epigenetics informs us that environmental influences are partly heritable.

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

There is compelling evidence for critical and sensitive periods in the development of a child. Different capacities are malleable at different stages of the life cycle. For example, IQ is rank stable after age 10, whereas personality skills are malleable through adolescence and into early adulthood. A substantial body of evidence from numerous disciplines shows the persistence of early life disadvantage in shaping later life outcomes. Early life environments are important for explaining a variety of diverse outcomes, such as crime, health, education, occupation, social engagement, trust, and voting.

## 5. Family Investments

Gaps in skills by age across different socioeconomic groups have counterparts in gaps in family investments and environments. Children from disadvantaged environments are exposed to a substantially less rich vocabulary than children from more advantaged families. At age three, children from professional families speak 50% more words than children from working-class families and more than twice as many compared to children from welfare families. There is a substantial literature showing that disadvantaged children have compromised early environments as measured on a variety of dimensions. Recent evidence documents the lack of parenting knowledge among disadvantaged parents. Parenting styles in disadvantaged families are much less supportive of learning and encouraging child exploration.

## 6. Resilience and Targeted Investment

Although early life conditions are important, there is considerable evidence of resilience and subsequent partial recovery. To our knowledge, there is no evidence of full recovery from initial disadvantage. The most effective adolescent interventions target the formation of personality, socioemotional, and character skills through mentoring and guidance, including providing information. This evidence is consistent with the greater malleability of personality and character skills into adolescence and young adulthood. The body of evidence to date shows that, as currently implemented, many later life remediation efforts are not effective in improving capacities and life outcomes of children from disadvantaged environments. As a general rule, the economic returns to these programs are smaller compared to those policies aimed at closing gaps earlier.



However, workplace-based adolescent intervention programs and apprenticeship programs with mentoring, surrogate parenting, and guidance show promising results. They appear to foster character skills, such as increasing self-confidence, teamwork ability, autonomy, and discipline, which are often lacking in disadvantaged youth. In recent programs with only short-term follow-ups, mentoring programs in schools that provide students with information that improves their use of capacities have also been shown to be effective.

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

A recurrent finding from the family influence and intervention literatures is the crucial role of child-parent/child-mentor relationships that “scaffold” the child (i.e., track the child closely, encourage the child to take feasible next steps forward in his or her “proximal zone of development,” and do not bore or discourage the child). Successful interventions across the life cycle share this feature. The child as an “*emergent*” system.

## 8. High Returns to Early Investment

Despite the generally low returns to interventions targeted toward the cognitive skills of disadvantaged adolescents, the empirical literature shows high economic returns for investments in young disadvantaged children. There is compelling evidence that high-quality interventions targeted to the early years are effective in promoting skills. This is a manifestation of **“dynamic complementarity”**.

## Predistribution, Not Just Redistribution

## A Comprehensive Understanding of Capability Formation

- To effectively produce capabilities, we should take a more comprehensive approach to understanding the economics of skill development.
- Need to formulate policies that clearly recognize what skills matter, how they are produced and at what stage of the life cycle it is most productive to invest, and how we should prioritize public policy toward producing skills.
- Doing so avoids fragmented and often ineffective approaches to public policy that miss the pervasive importance of skills.
- The skills problem is at the core of many social and economic problems that plague societies around the world.

**Fragmented solutions are often not effective.**

# Fragmented Solutions



**Prevention, not just remediation.**

# The Ingredients of Effective Capability Formation Strategies

## Modern Understanding of Human Development

- **The family lives of children are the major producers of cognitive and socio-emotional skills.**

- **Supplementing** the family and its resources, engaging it in enriching the life of the child, in supporting the child in school, and in giving sound advice to children, are effective policies. So are policies that enhance the skills of parents to be parents.
  - (i) If society intervenes early enough and in a consistent fashion over the life cycle of a child, it can promote cognitive and socioemotional capabilities, as well as the health and wellbeing of children born into disadvantage.
  - (ii) Through multiple channels, these effects percolate across the life cycle and across generations.
  - (iii) For example, high-quality early interventions reduce inequality by promoting schooling, reducing crime, and reducing teenage pregnancy.
  - (iv) They promote health and healthy behaviors.
  - (v) They also foster workforce productivity.

- (vi) These interventions have high benefit-cost ratios and rates of return. They pass efficiency criteria that any social program should be asked to pass.
- (vii) Quality early childhood policies are among the rare social policies that face no equality-efficiency tradeoff.
- (viii) What is fair is also economically efficient.
- (ix) Early interventions that build the capability base of children have much higher economic returns than later remediation and prevention programs, such as public job training, convict rehabilitation programs, adult literacy programs, tuition subsidies, or expenditure on police to reduce crime.

- **Universal ingredient of all successful interventions—by families, schools, and mentors in the work place**
- **“Scaffolding”**
- **Monitoring and mentoring the child, taking stock of where they are and taking them to the next step. Interactions and interplay are at the heart of all successful skill development approaches.**

## The Importance of Cognitive and Character Skills

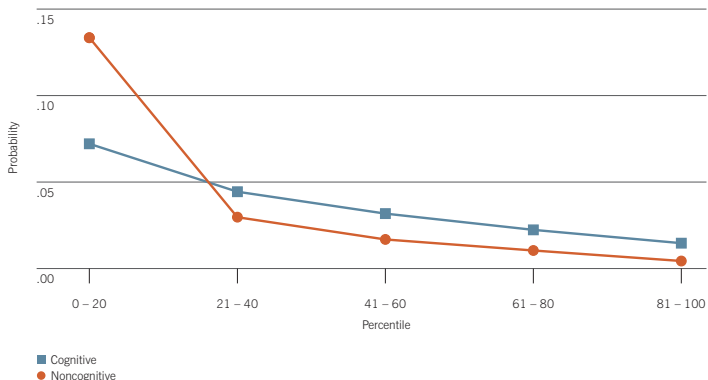


**Table 2: The Big Five Domains and Their Facets: OCEAN**

Big Five Personality Factor	Facets (and correlated trait adjective)
Openness to experience	Fantasy (imaginative) Aesthetic (artistic) Feelings (excitable) Actions (wide interests) Ideas (curious) Values (unconventional)
Conscientiousness	Competence (efficient) Order (organized) Dutifulness (not careless) Achievement striving (ambitious) Self-discipline (not lazy) Deliberation (not impulsive)
Extraversion	Warmth (friendly) Gregariousness (sociable) Assertiveness (self-confident) Activity (energetic) Excitement seeking (adventurous) Positive emotions (enthusiastic)
Agreeableness	Trust (forgiving) Straight-forwardness (not demanding) Altruism (warm) Compliance (not stubborn) Modesty (not show-off) Tender-mindedness (sympathetic)
Neuroticism/Emotional Stability	Anxiety (worrying) Hostility (irritable) Depression (not contented) Self-consciousness (shy) Impulsiveness (moody) Vulnerability to stress (not self-confident)



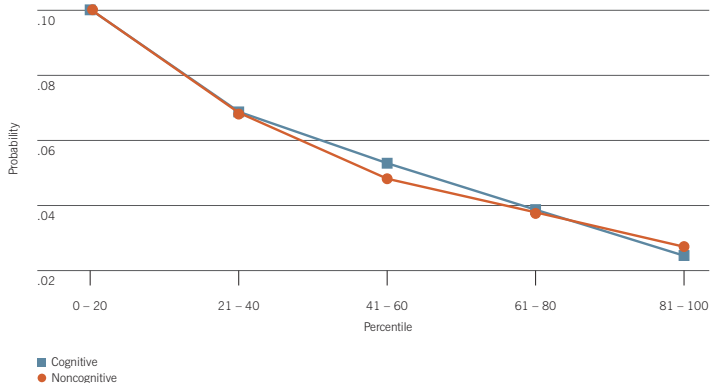
## Ever been in jail by age 30, by ability (males)



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).

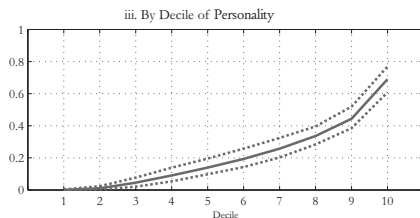
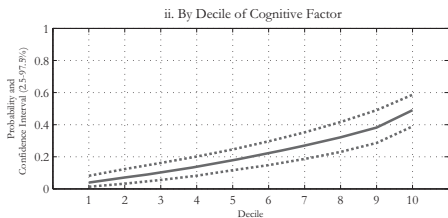
## Probability of being single with children



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.

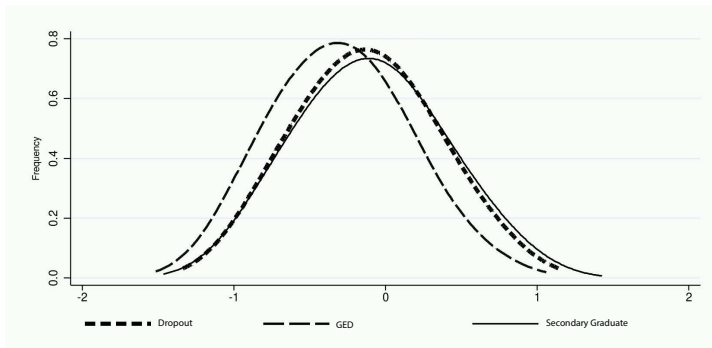
Source: Heckman, Stixrud, and Urzua (2006).

# Probability of being a 4-year college graduate by age 30



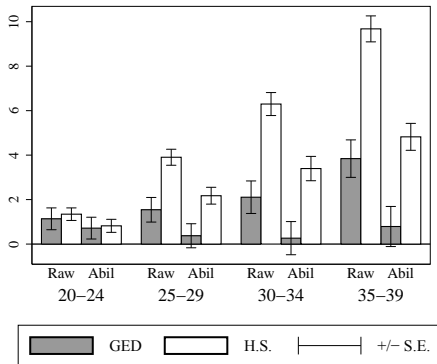
**The GED illustrates the power of non-cognitive skills**

**Figure 4:** Distribution of Cognitive Ability by Educational Status (No College Sample, All Ethnic Groups)



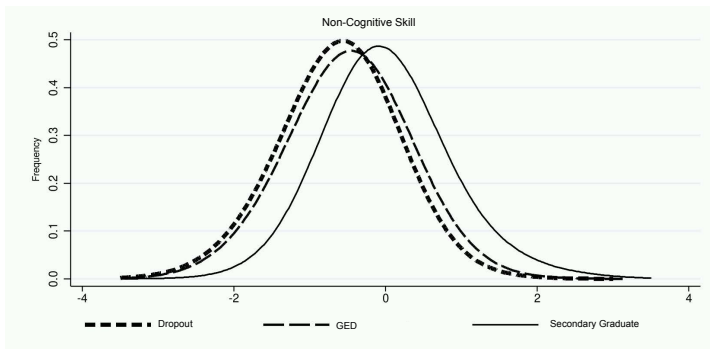
Source: Reproduced from Heckman et al. (2011), based on data from the National Longitudinal Survey of Youth, 1979 (NLSY79).

**Figure 5: Hourly Wage Differences of GED Recipients and Traditional Graduates Compared to Uncertified Dropouts—Ages 20–39**



*Source:* Reproduced from Heckman et al. (2014), which uses data from the National Longitudinal Survey of Youth, 1979 (NLSY79).

Figure 6: Distribution of Non-Cognitive Skills by Education Group

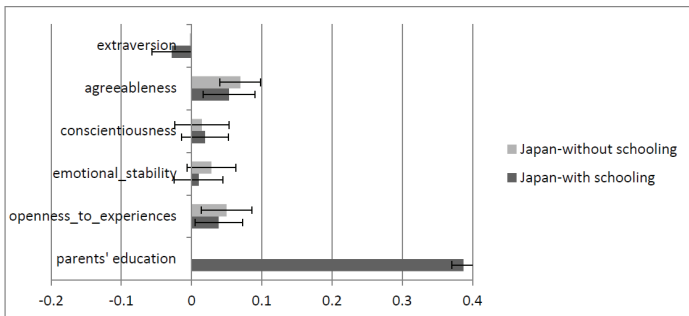


Source: Reproduced from Heckman et al. (2011), which uses data from the National Longitudinal Survey of Youth, 1979 (NLSY79).



## Evidence on Noncognitive Skills for Japan

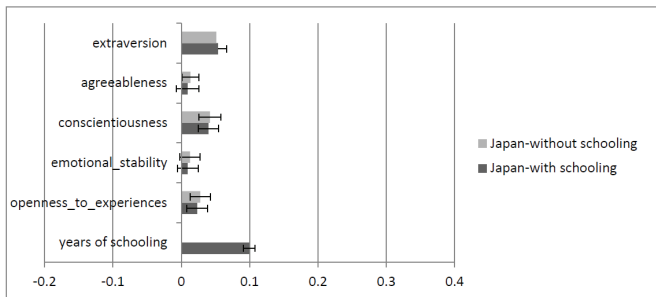
**Figure 7:** Standardized Regression Coefficient associated with Years of Schooling in Japan



**Source:** LEE SunYoun and OHTAKE Fumio, RIETI Discussion Paper Series 14-E-023, May 2014

**Note:** The figure displays standardized regression coefficient from multivariate of years of schooling completed on the personality trait and parental education, controlling for age and age-squared and gender. The darker rectangular bars are the estimates with the control of parental educational background and the line bars represent robust standard errors.

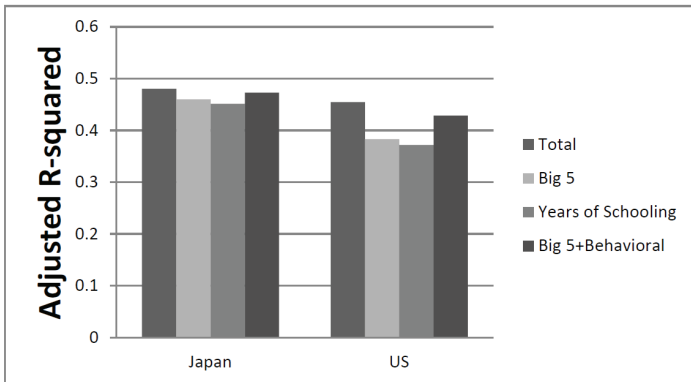
**Figure 8:** Standardized Regression Coefficient associated with Earnings in Japan



**Source:** LEE SunYoun and OHTAKE Fumio, RIETI Discussion Paper Series 14-E-023, May 2014

**Note:** The figure displays standardized regression coefficient from multivariate of annual income on the personality trait and ones own educational attainment, controlling for potential experience and its squared, gender, occupation, type of employment, industry, company size, and years of work experience at the current work place. The darker rectangular bars are the estimates with the control of parental educational background and the line bars represent robust standard errors.

Figure 9: Adjusted R-2 associated with Earnings in Japan and the US



**Source:** LEE SunYoun and OHTAKE Fumio, RIETI Discussion Paper Series 14-E-023, May 2014

**Note:** Adjusted  $R^2$ s for linear regressions for annual income (log). Total indicates the Adjusted  $R^2$  when Big 5, total years of schooling, and behavioral characteristics are all included into the wage equation.

- Can these traits be reliably measured?

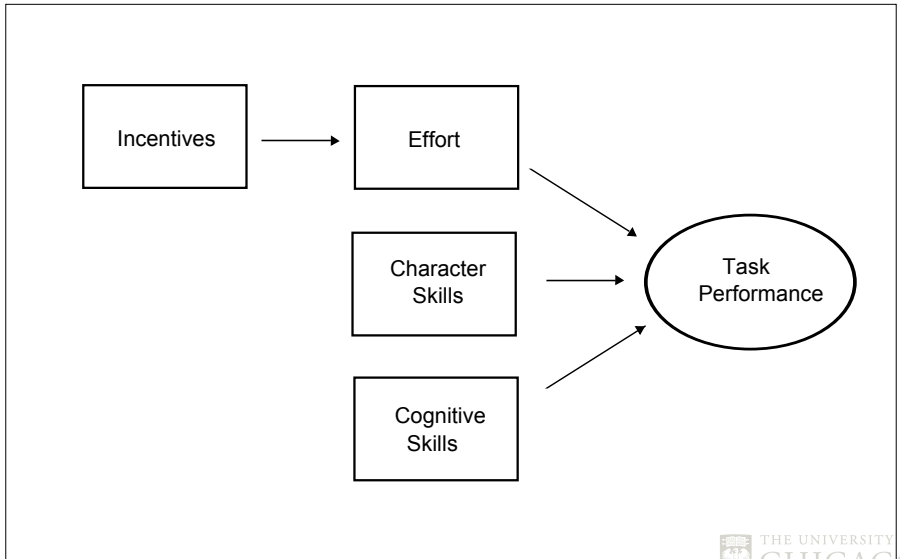
## **Developing a More Comprehensive Measurement Systems: A Task-Based Framework for Identifying and Measuring Skills**

*Personality traits are the relatively enduring patterns of thoughts, feelings, and behaviors that reflect the tendency to respond in certain ways under certain circumstances.  
(Roberts, 2009, 140)*

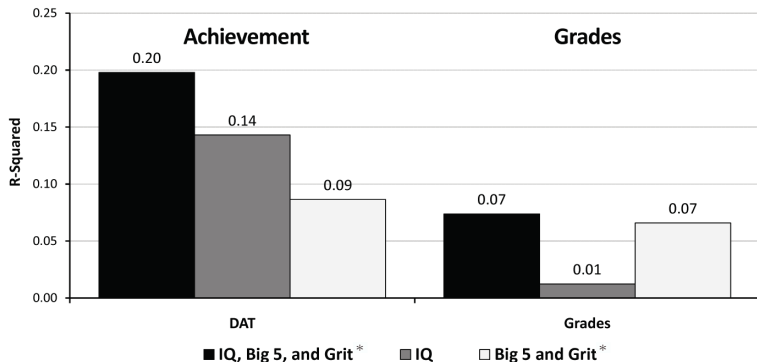
- All psychological measures are performance on tasks



Figure 10: Determinants of Task Performance



**Figure 11:** Decomposing Variance Explained for Achievement Tests and Grades into IQ and Non-Cognitive Skills: Stella Maris Secondary School, Maastricht, Holland

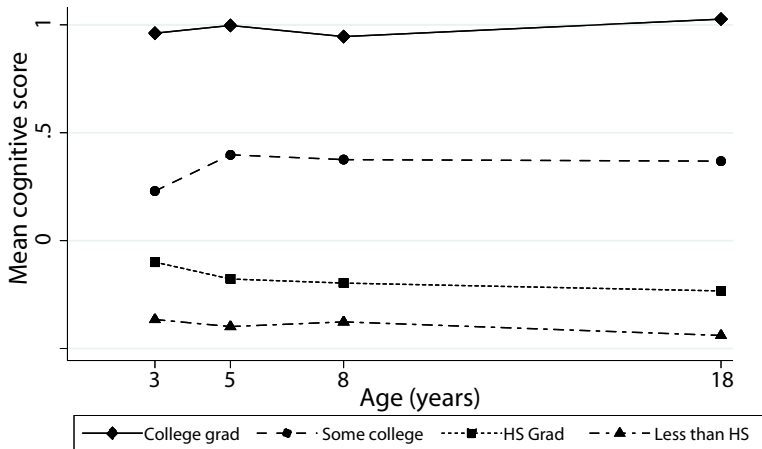


Source: Borghans et al. (2011).

Note: Grit is a measure of persistence on tasks (Duckworth et al., 2007).

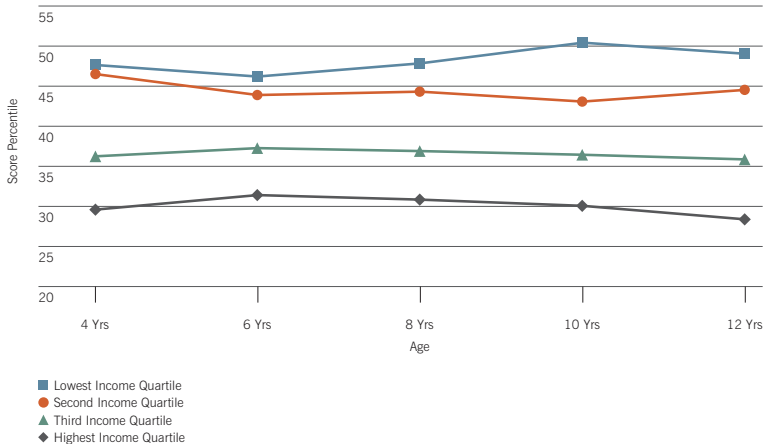
## Gaps Open Up Early

## Trend in mean by age for cognitive score by maternal education

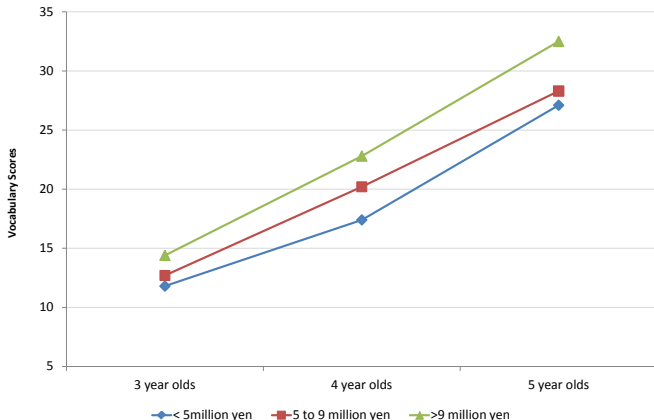


Each score standardized within observed sample. Using all observations and assuming data missing at random. Source: Brooks-Gunn et al. (2006).

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



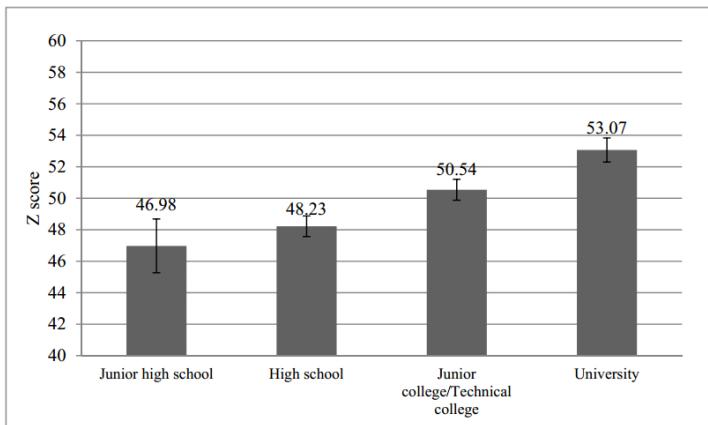
## Lexical Ability of Children by Annual Household Income



Source: recreated from Hamano 2010

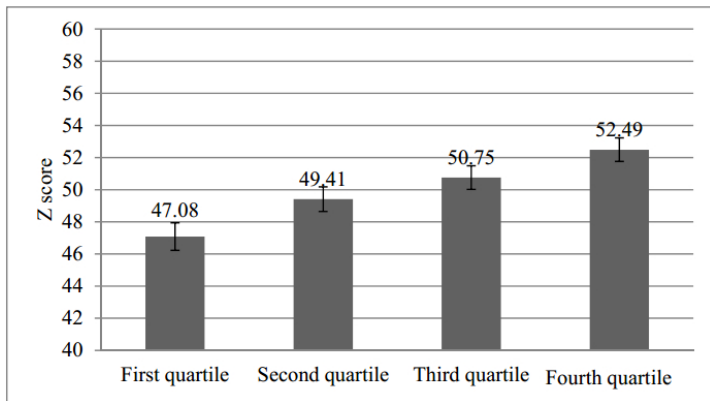
**Note:** Lexical Ability is measured by Picture Vocabulary Test (PVT). PVT measure the degree of development of language comprehension, in particular, basic “vocabulary comprehension.” The test is used internationally and asks children to perform such tasks as choosing the most appropriate picture from a set of four for a word given by the examiner.

Figure 12: Mother's educational attainment and level of academic ability, Mathematics



Source: Akabayashi et al. (2013).

Figure 13: Family income and academic ability, Mathematics



Source: Akabayashi et al. (2013).



## How to Interpret This Evidence

- Evidence on the early emergence of gaps leaves open the question of which aspects of families are responsible for producing these gaps.
- Is it due to genes?
- Family environments? Neighborhood and community effects?
- Parenting and family investment decisions?
- The evidence from a large body of research demonstrates an important role for investments and family and community environments in determining adult capacities above and beyond the role of the family in transmitting genes.
- The quality of home environments by family type is highly predictive of child success.

*“It is said that heaven does not create one man above or below another man. Any existing distinction between the wise and the stupid, between the rich and the poor, comes down to a matter of education.” – Fukuzawa Yukichi*

## Variation in Family Environments

## Mothers' Speech and Child Vocabulary: Hart & Risley, 1995

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

### 1. Emergence of the Problem

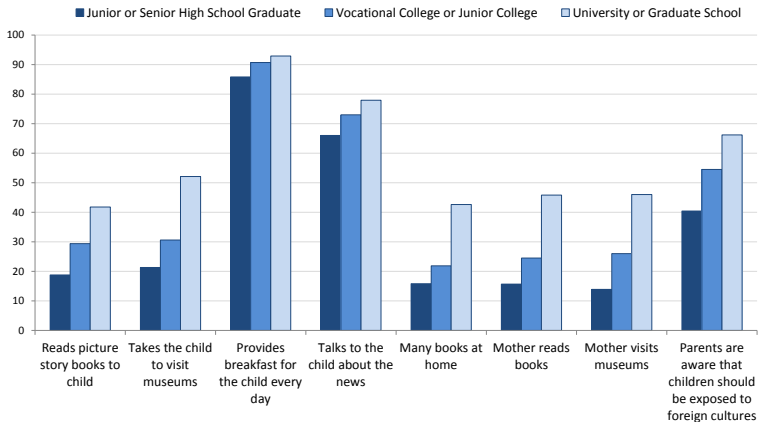
In a typical hour, the average child hears:

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

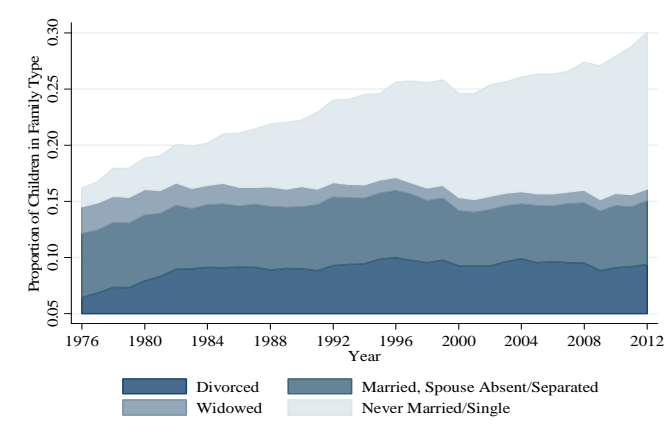
Cumulative Vocabulary at Age 3	
Children from welfare families:	500 words
Children from working class families:	700 words
Children from professional families:	1,100 words

## Relation between the Mother's Education Background and her Educational Awareness and Behavior (%)



Source: Hamano 2010

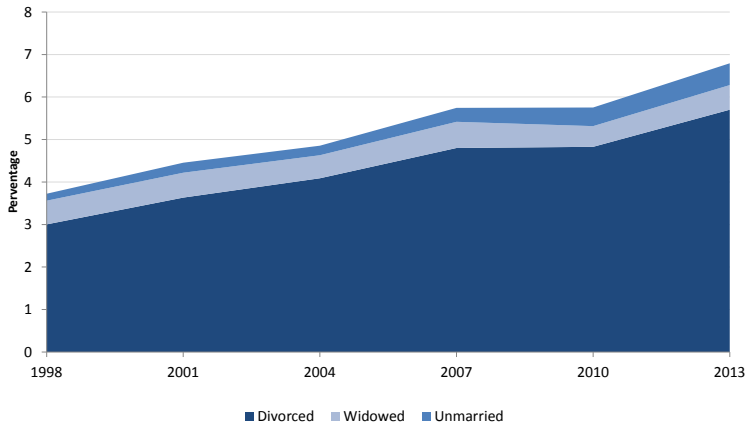
## Children Under 18 Living in Single Parent Households by Marital Status of Parent



Source: IPUMS March CPS 1976-2012

Note: Parents are defined as the head of the household. Children are defined as individuals under 18, living in the household, and the child of the head of household. Children who have been married or are not living with their parents are excluded from the calculation. Separated parents are included in "Married, Spouse Absent" Category

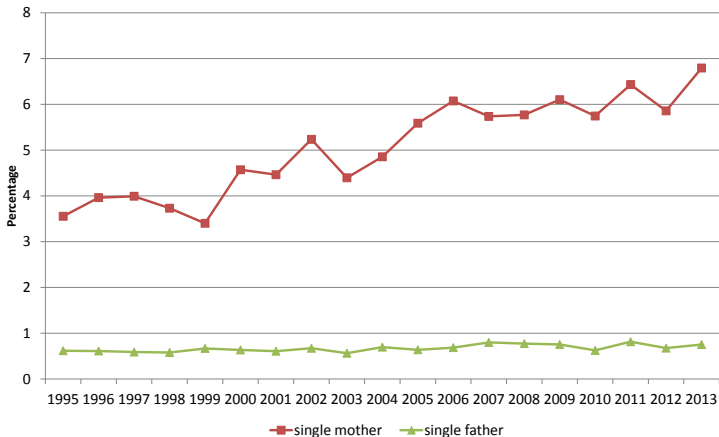
## Children Under 20 Living in Single Parent Households by Marital Status of Single Mother (Japan)



Source: Comprehensive Survey of Living Condition



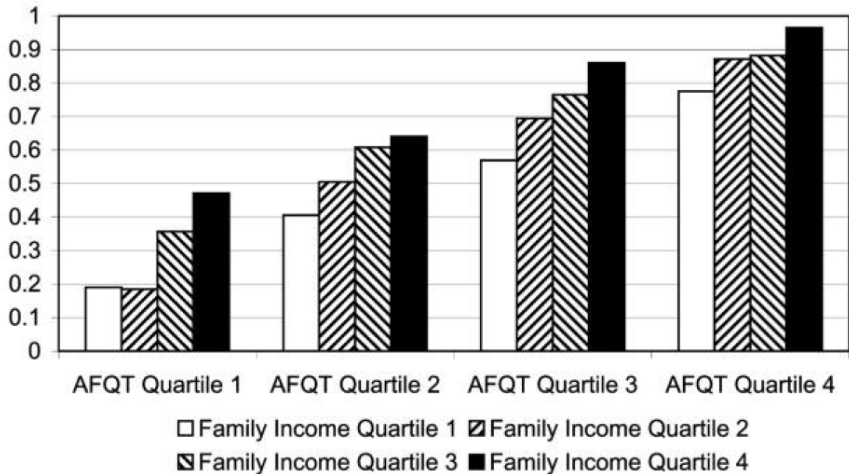
## Single Parent Households Among Households with Children under 20 in Japan



Source: Comprehensive Survey of Living Condition

- Interpreting effects of family income: U.S. / Japan / Denmark

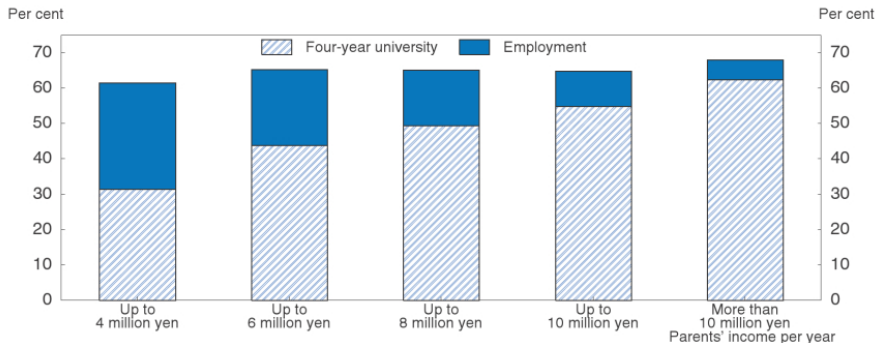
## College attendance by AFQT and Family Income Quartiles (1997)



Source: Belley and Lochner (2007).

Figure 14: In Japan: Family income plays a key role in determining students' path following high school graduation

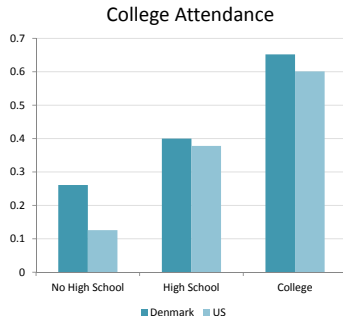
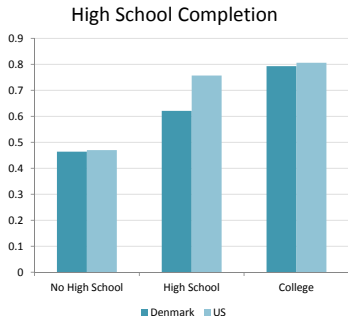
## Percent of High School Graduates



Source: Ministry of Education, Culture, Sports, Science and Technology (2009).

## An Informative Comparison: US vs. Denmark

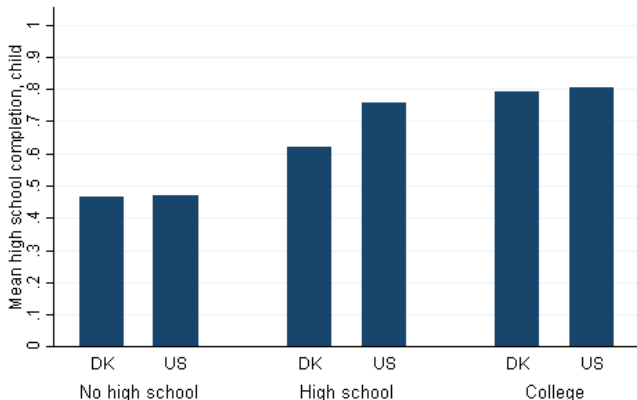
## High School Completion and College Attendance by Mother's Education Denmark and US



Source: James Heckman and Rasmus Landersø (2014).

Note: Observation Landersø Denmark 33,954; CNLSY 3,268.

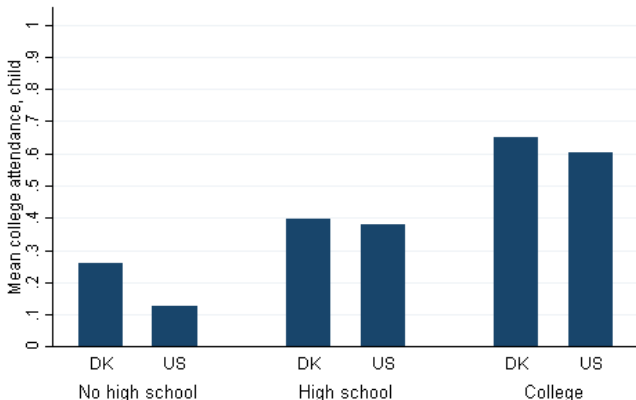
Figure 15: High school completion by mother's education



Note: US is CNLSY sample. Sample size 3,268. DK is Danish register data. Sample size is 33,956.  $P(\text{US}=\text{DK})$  for mom no high school: 0.862.  $P(\text{US}=\text{DK})$  for mom high school: 0.000.  $P(\text{US}=\text{DK})$  for mom college: 0.348.

Source: Rasmus Landersø (2014).

Figure 16: College attendance by mother's education



Note: US is CNLSY sample. Sample size 3,268. DK is Danish register data. Sample size is 33,956.  $P(\text{US}=\text{DK})$  for mom no high school: 0.000.  $P(\text{US}=\text{DK})$  for mom high school: 0.072.  $P(\text{US}=\text{DK})$  for mom college: 0.001.

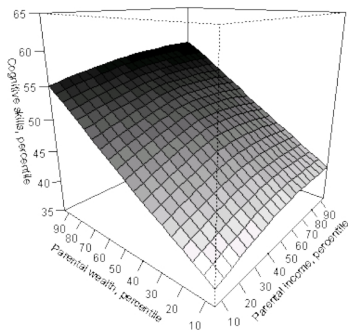
Source: Rasmus Landersø (2014).



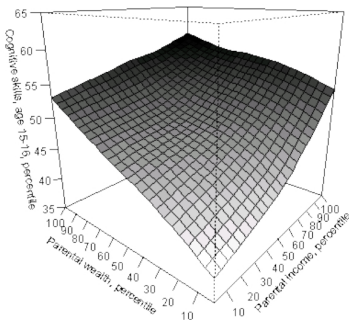
- What is the role for capabilities in explaining gaps?

Figure 17: Cognitive skills at age 15-16 and parental income / wealth

(a) CNLSY



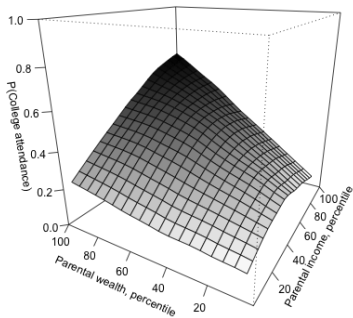
(b) Denmark



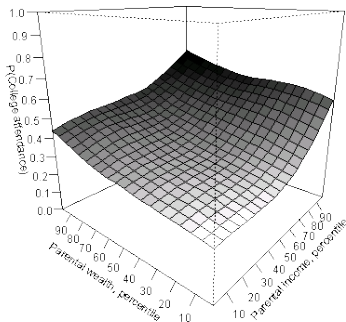
Source: James Heckman and Rasmus Landersø (2014).

Figure 18: College attendance and parental income / wealth

(a) CNLSY

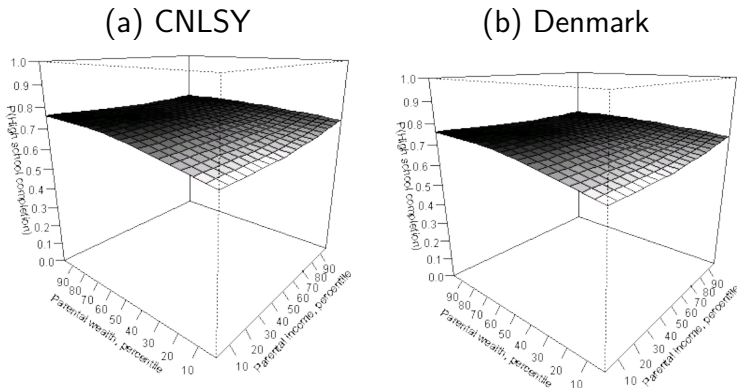


(b) Denmark



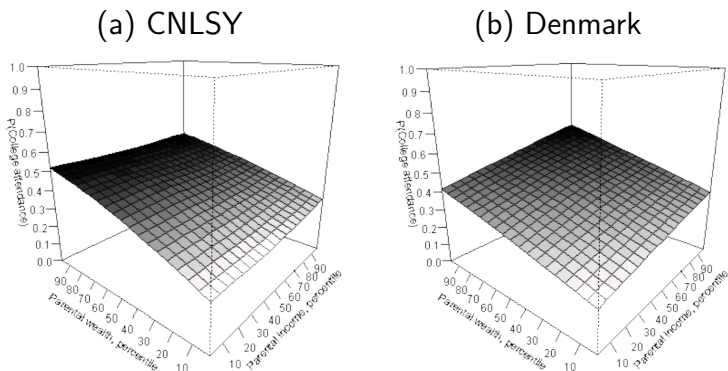
Source: James Heckman and Rasmus Landersø (2014).

Figure 19: High school completion by parental income and wealth —  $\theta^C$ ,  $\theta^{N,C}$



Source: James Heckman and Rasmus Landersø (2014).

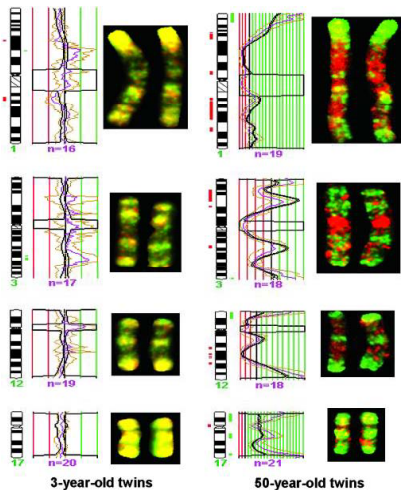
Figure 20: College attendance by parental income and wealth —  $\theta^C$ ,  $\theta^{N,C}$



Source: James Heckman and Rasmus Landersø (2014).

# **Genes, Biological Embedding of Experience, and Gene-Environment Interactions**

# DNA methylation and histone acetylation patterns in young and old twins



Source: Fraga, Ballestar et al. (2005).

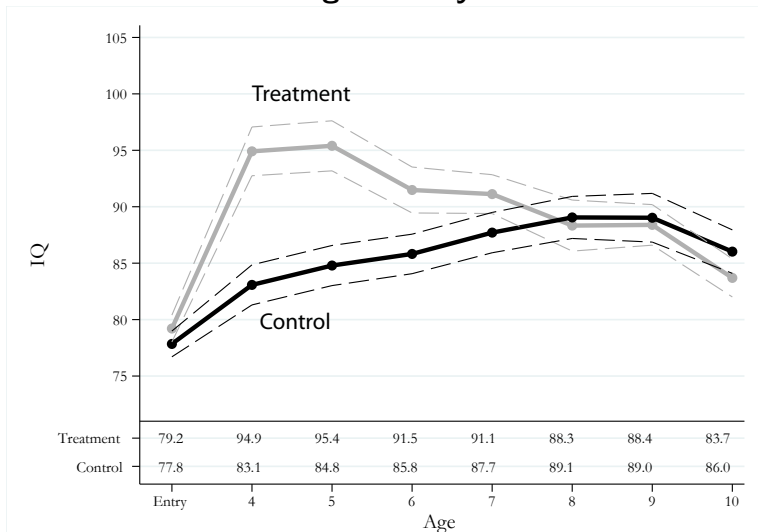
## Interventions

Early childhood interventions targeted to disadvantaged children are effective in overcoming these gaps.

- They provide evidence against a purely genetic argument.
- These provide supplementary parenting for disadvantaged children.
- A primary avenue through which they operate is personality and noncognitive skills.
- Did not boost IQ.



## Male Cognitive Dynamics

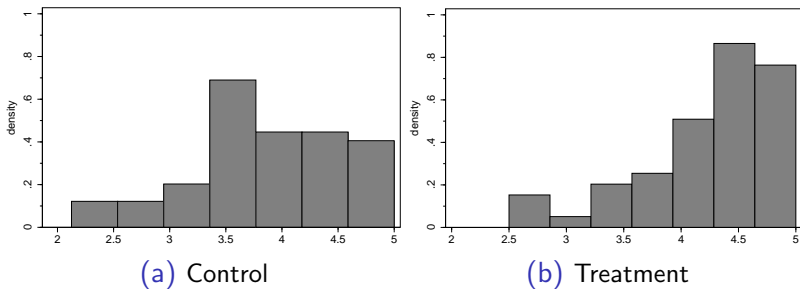


Yet the Perry Program has a statistically significant annual rate of return of around 6%–10% per annum—for both boys and girls—in the range of the post–World War II stock market returns to equity in the U.S. labor market, estimated to be 6.9%.

- It worked primarily through noncognitive and character channels.

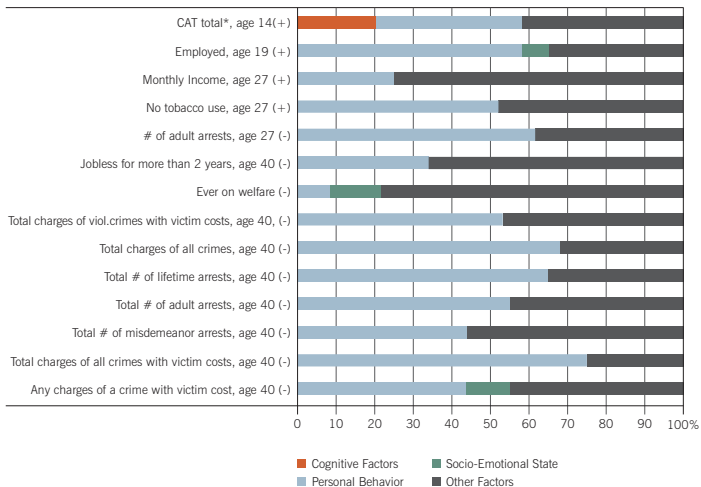
Early interventions reducing problem behavior lower the probability of engaging in unhealthy behaviors in adulthood.

Figure 21: Mechanisms: Externalizing Behavior, Males



Data: Perry Preschool Program.  
Source: Heckman, Pinto, Savelyev (2013).

# Decomposition of Treatment Effects, Males

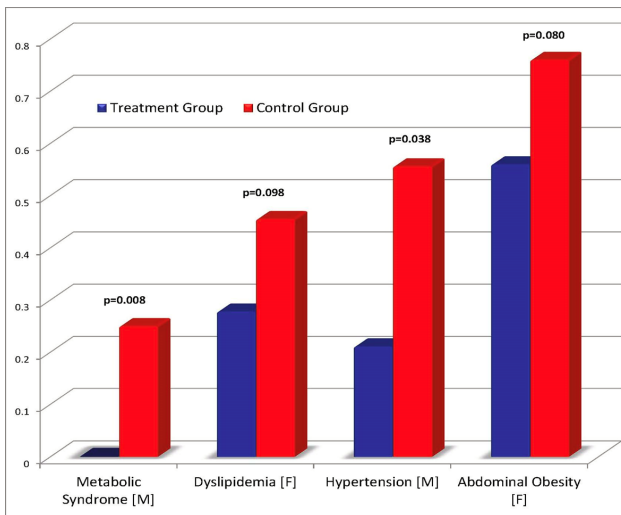


# Long-Term Health Effects of Perry: Males

Outcome	Control Mean	Treatment Mean	Permutation <i>p</i> -value	Stepdown <i>p</i> -value
Not a daily smoker at age 27	0.462	0.581	0.080	0.080
Light or non-smoker at age 27	0.615	0.903	0.004	0.004
No. of cigarettes at age 27	8.744	4.291	0.006	0.007
Not a daily smoker at age 40	0.472	0.633	0.020	0.041
Light or non-smoker at age 40	0.743	0.929	0.011	0.021
No. of cigarettes at age 40	6.543	3.714	0.036	0.053
Change in diet at age 40	0.229	0.380	0.018	0.061

Data: Perry Preschool Program. Source: Conti, Heckman et al. (2013)

# The Abecedarian Intervention



Source: Campbell, Conti, Heckman, Moon, Pinto, and Pungello (2014)

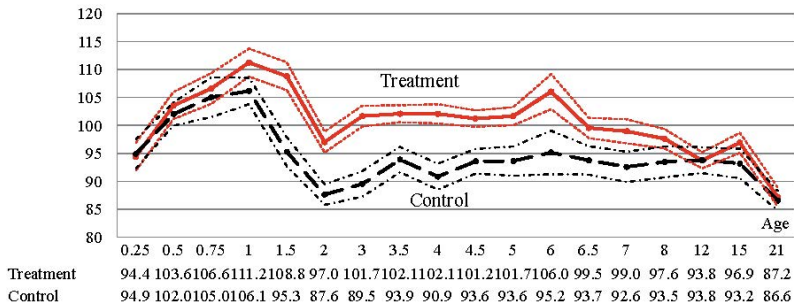
## ABC Health Effects Mid 30s: Males

Outcome	Control Mean	Treatment Mean	Permutation <i>p</i> -value	Stepdown <i>p</i> -value
Diastolic Blood Pressure	92.000	78.526	0.023	0.023
Systolic Blood Pressure	143.333	125.789	0.020	0.033
Obesity & Hypertension	0.500	0.111	0.016	0.016
Severe Obesity & Hypertension	0.375	0.000	0.005	0.013
Hypertension & Dyslipidemia	0.333	0.000	0.005	0.012
Vitamin D Deficiency	0.750	0.368	0.021	0.021
Framingham Risk Score	7.043	4.889	0.038	0.038

Data: Abecedarian Program. Source: Campbell et al. (2014)



## ABC Mechanisms: IQ



## Attachment, 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.
- **Enhanced *attachment and engagement* of parents.**
- This has important implications for how we model family influence.

Dewey:

*“Successful schools do what successful parents do”*  
—Dewey (1915)

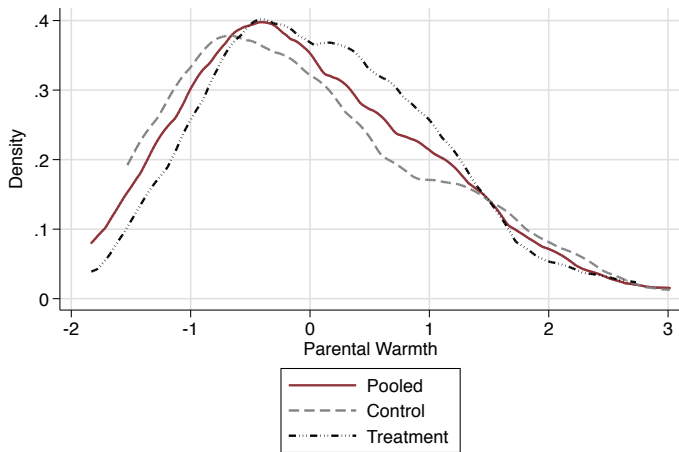
Recent analyses would change this paraphrase to:

*“Successful interventions to promote capabilities at any age do what successful parents and mentors do”*

## Mechanisms—producing effects

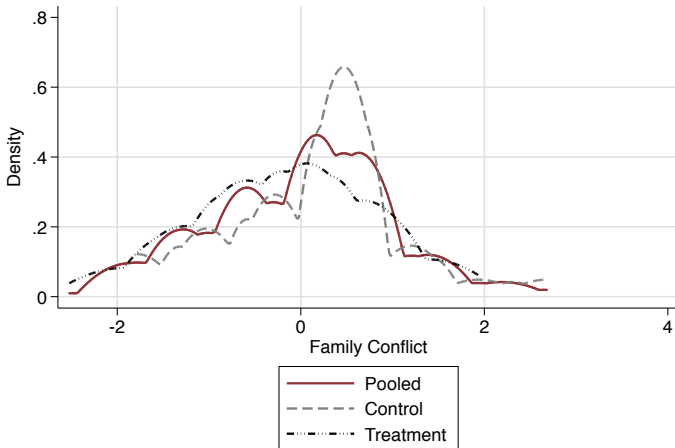
- (a) Information
- (b) Changing preferences of parents
- (c) Parental response to child's curiosity and interest induced by participation in the program

Figure 22: Parental Warmth, Perry Preschool



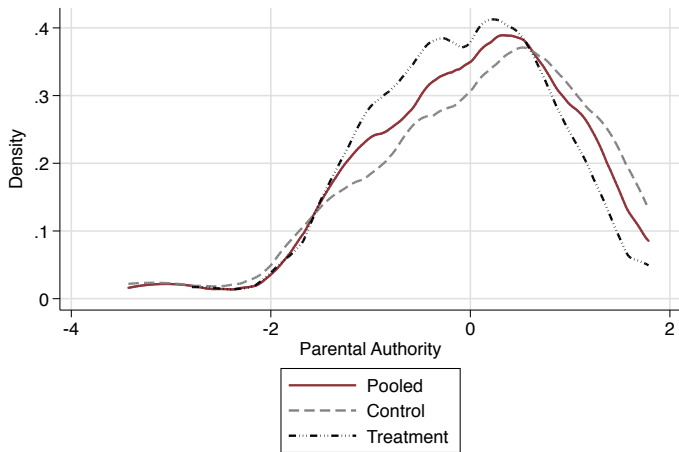
Note: This figure presents the densities –pooled and by treatment status– for a single factor summarizing a set of questions in the Perry questionnaire attempting to measure how much affection the child gets from the parent(s).

Figure 23: Family Conflict, Perry Preschool



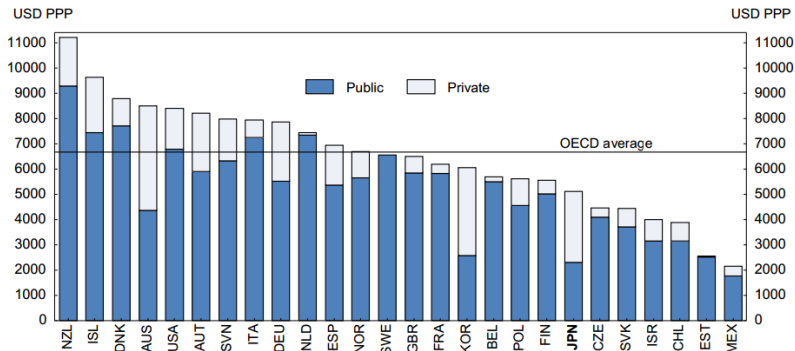
Note: this figure presents the densities –pooled and by treatment status– for a single factor summarizing a set of questions in the Perry questionnaire attempting to measure family conflict in the household.

Figure 24: Parental Authority, Perry



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 discipline the child is subject to from the parent(s).

**Figure 25:** Spending per student on pre-primary education was low in Japan in 2009



*Note:* The bars show public (bottom part) and private (top part) education spending in US dollars, adjusted for price level differences across countries, for children too young for primary school. Annual spending is based on the number of students, calculated on a full-time basis.  
*Source:* OECD (2012f), OECD Education at a Glance 2012.



## **Understanding the Dynamics of Skill Formation: Skills Beget Skills**

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

**Social-emotional Skills**



**Cognitive Skills**

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

**Health**



**Cognitive Skills**

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

**Cognitive Skills**

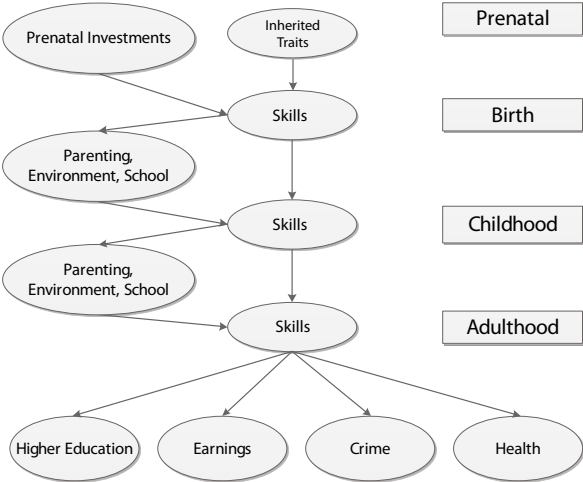


**Produce better health practices;  
produce more motivation; greater  
perception of rewards.**

*(child better understands and controls its environment)*

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

Figure 26: Framework for Understanding Skill Development



**Static complementarity:** Having higher level of a skill boosts productivity of other skills in investment and performance

**Dynamic complementarity:** Investing today boosts the skill base for tomorrow

**Dynamic complementarity increases with age**

## Critical and sensitive periods

**But Early Life Conditions Are Not the Full Story:  
Resilience, Recovery, and Repair**



**Many Later Remediation Efforts Targeted to the Less Able  
are Costly and Often Ineffective**

**But Some Adolescent Policies are Effective Mentoring and Information has a Powerful Effect**

**The policies that are effective for adolescents provide mentoring and integrate schooling and work. At the core of effective mentoring is what is at the core of effective parenting: attachment, interaction, and trust. Effective policies focus on developing social and emotional skills, teaching conscientiousness.**

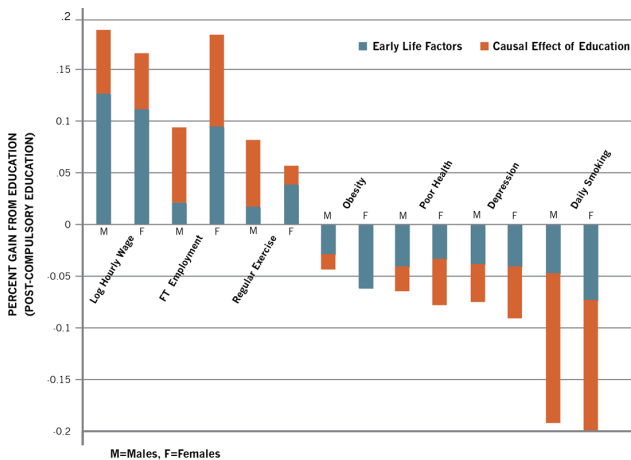
**Mentoring can be effective—workplace-based intervention shape noncognitive skills.**

**What about promoting education?**

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

# Disparities by Education (Post-compulsory Education)

- Education, Wages, Employment, and Health



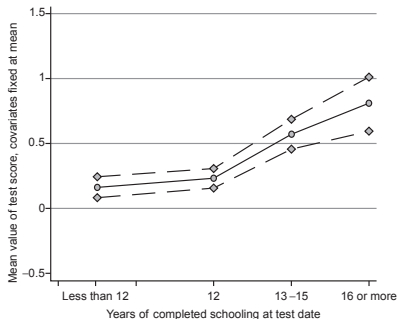
Note: Conti and Heckman (2010). Author's calculations using British Cohort Study, 1970.

## **Schooling promotes cognitive and noncognitive abilities**

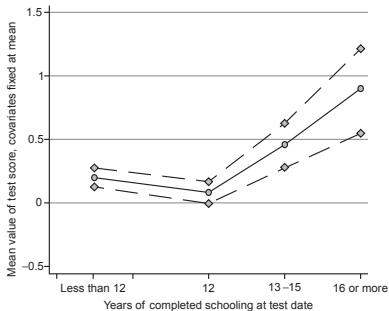


Figure 27: Causal Effect of Schooling on ASVAB Measures of Cognition

(a) Paragraph Comprehension



(b) Math Knowledge

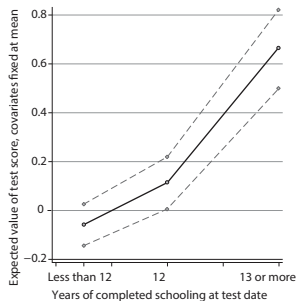
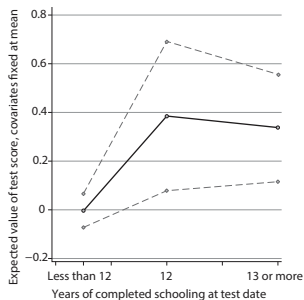


Source: Heckman et al. (2006).

Notes: Mean effect of schooling on components of the ASVAB. The first four components are averaged to create males with average ability. We standardize the test scores to have within-sample mean zero and variance one. The model is estimated using the NLSY79 sample. Solid lines depict average test scores, and dashed lines, 2.5%–97.5% confidence intervals. Regressors are fixed at means.

**Figure 28: Causal Effect of Schooling on Two Measures of Non-Cognitive Skill**

(c) Rotter Locus of Control Scale      (d) Rosenberg Self-Esteem Scale

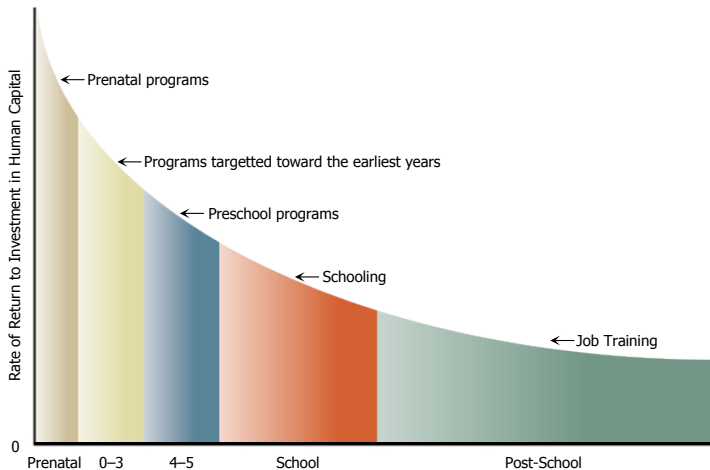


Source: Heckman et al. (2006).

Notes: Effect of schooling on socioemotional scales for males with average ability, with 95% confidence bands. The locus of control scale is based on the four-item abbreviated version of the Rotter Internal-External Locus of Control Scale. This scale is designed to measure the extent to which individuals believe they have control over their lives through self-motivation or self-determination (internal control), as opposed to the extent to which individuals believe that the environment controls their lives (external control). The self-esteem scale is based on the 10-item Rosenberg Self-Esteem Scale. This scale describes a degree of approval or disapproval toward oneself. In both cases, we standardize the test scores to have within-sample mean zero and variance one, after taking averages over the respective sets of scales. The model is estimated using the NLSY79 sample. Solid lines depict average test scores, and dashed lines, 2.5%–97.5% confidence intervals. Regressors are fixed at means.

# Summary

## Returns to a Unit Yen Invested



Source: Heckman (2008)

- For the disadvantaged, spending in most societies is almost in reverse order.
- This diagram and its policy message have to be carefully digested.
- It presents the rate of return to a unit of investment in parenting **at the beginning of the life of the child.**

- **Predistribution, *not* just redistribution.**
- **Prevention, *not* just remediation.**