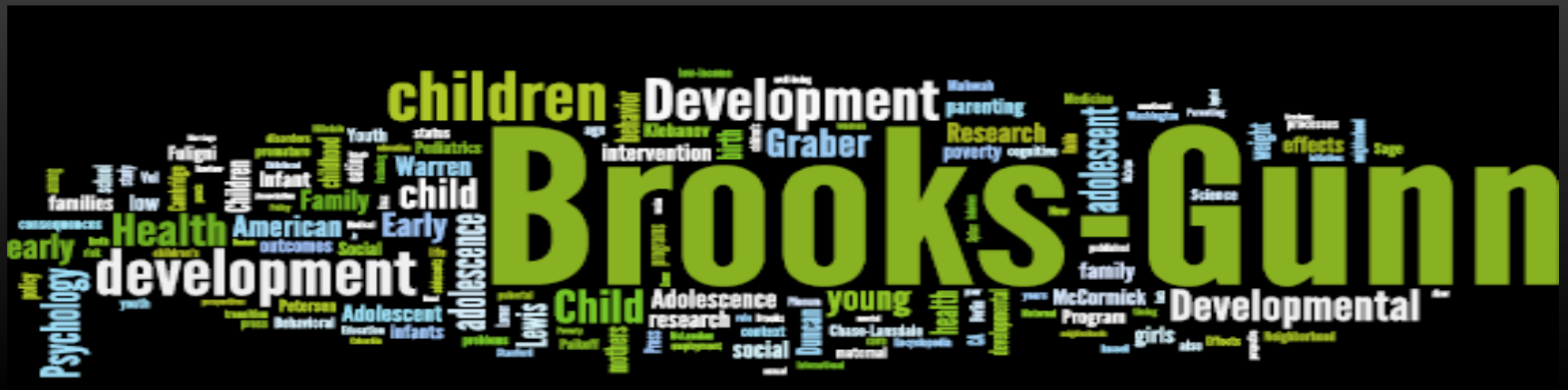

Disadvantage and Development: Strategies to Reduce Income Gaps in School Readiness

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Teachers College & the College of Physicians and Surgeons
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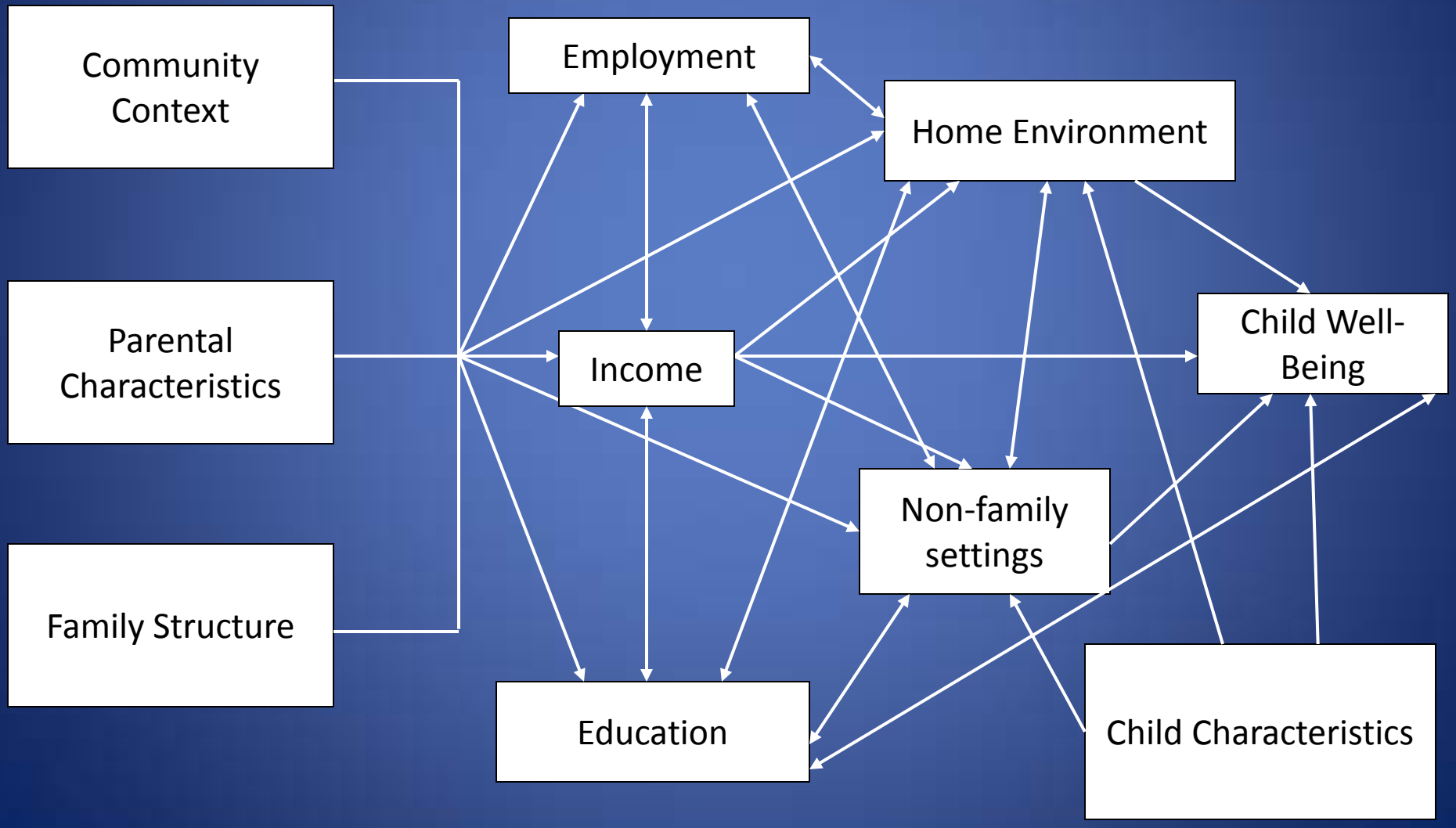
November 2012

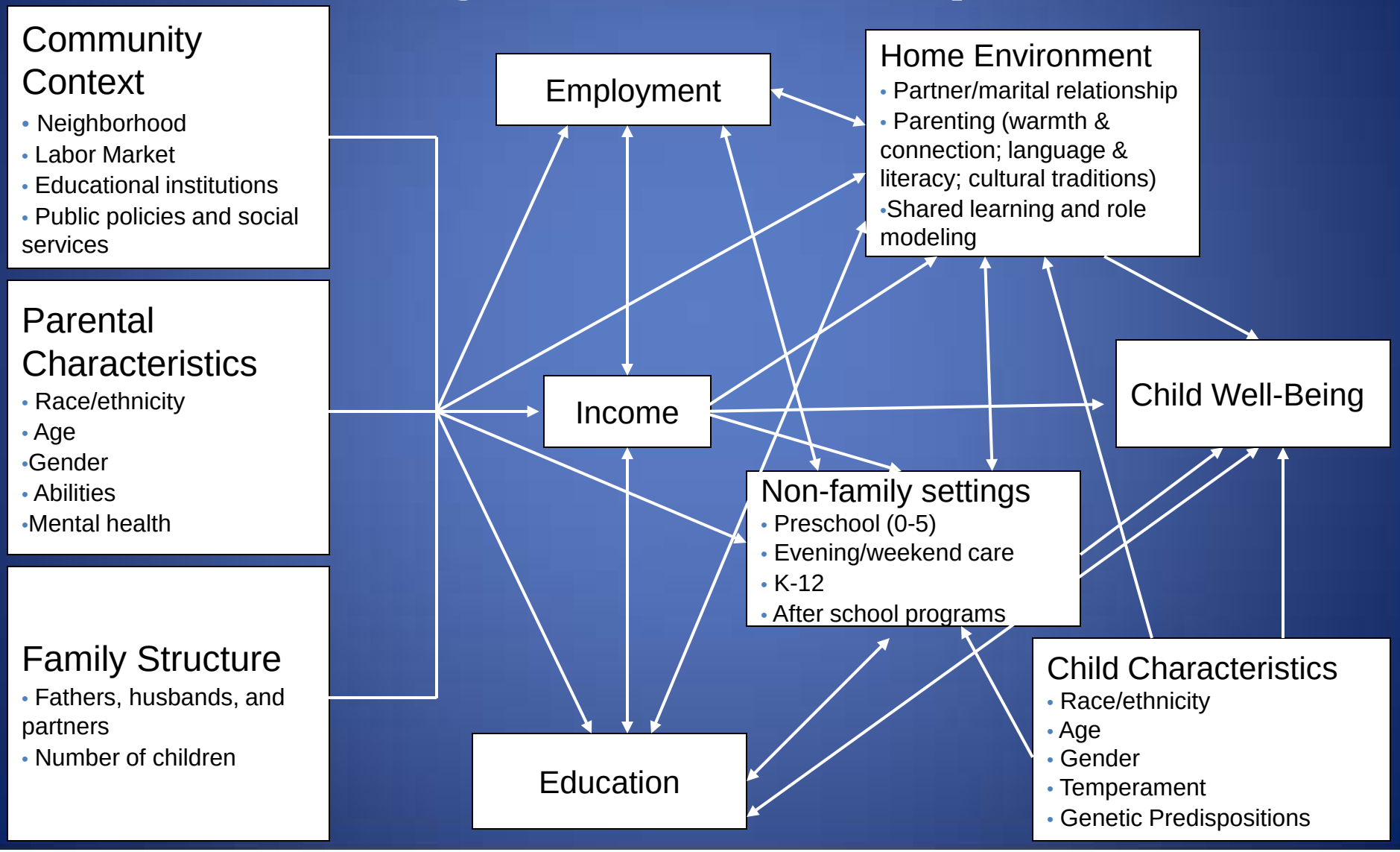
How and Why: Family Capital

- Income
- Education
- Family Structure
- Employment

A Conceptual Model of Inputs for Healthy Child Development



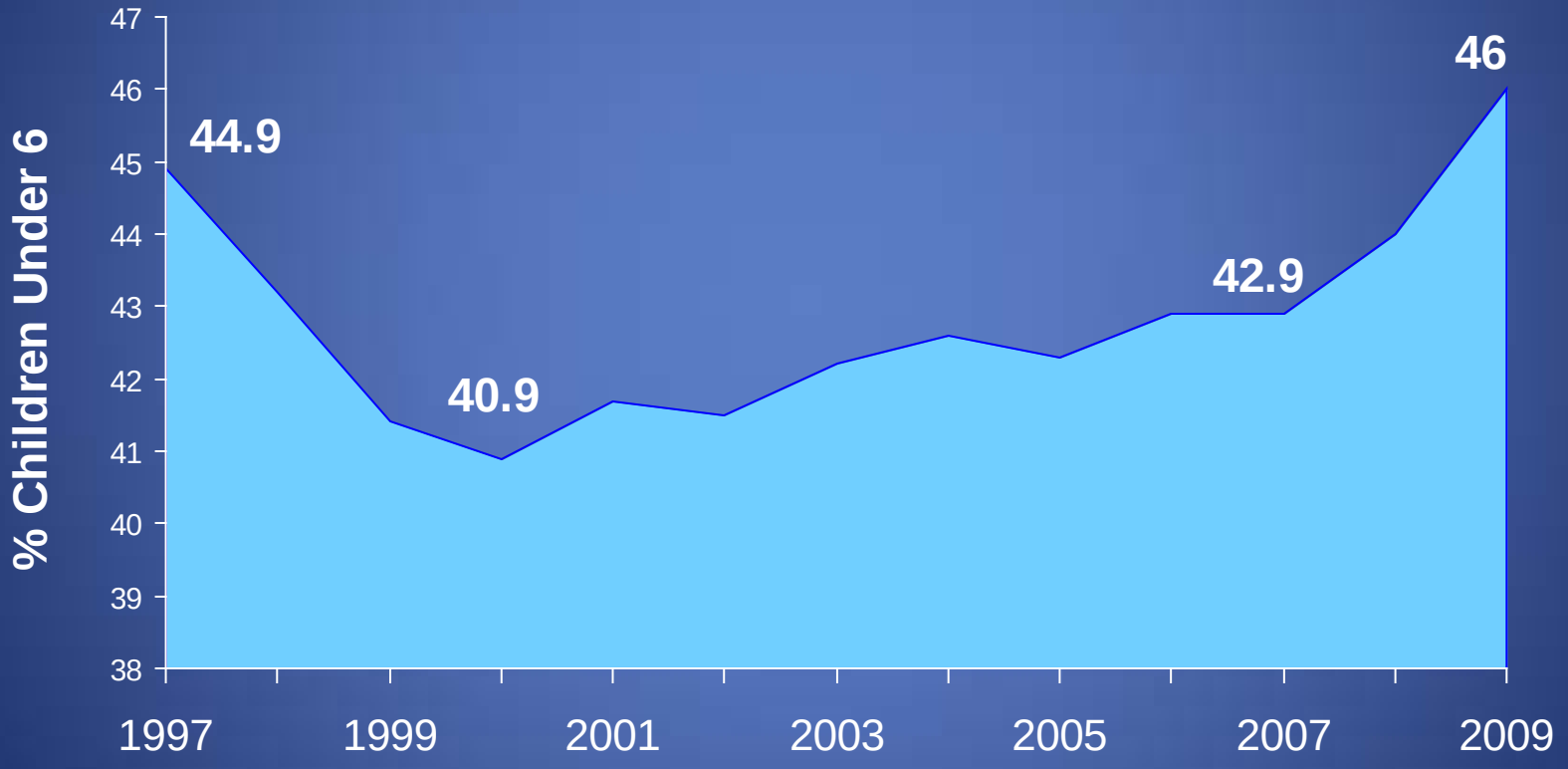
A Conceptual Model of Inputs for Healthy Child Development



How and Why: Children's Success

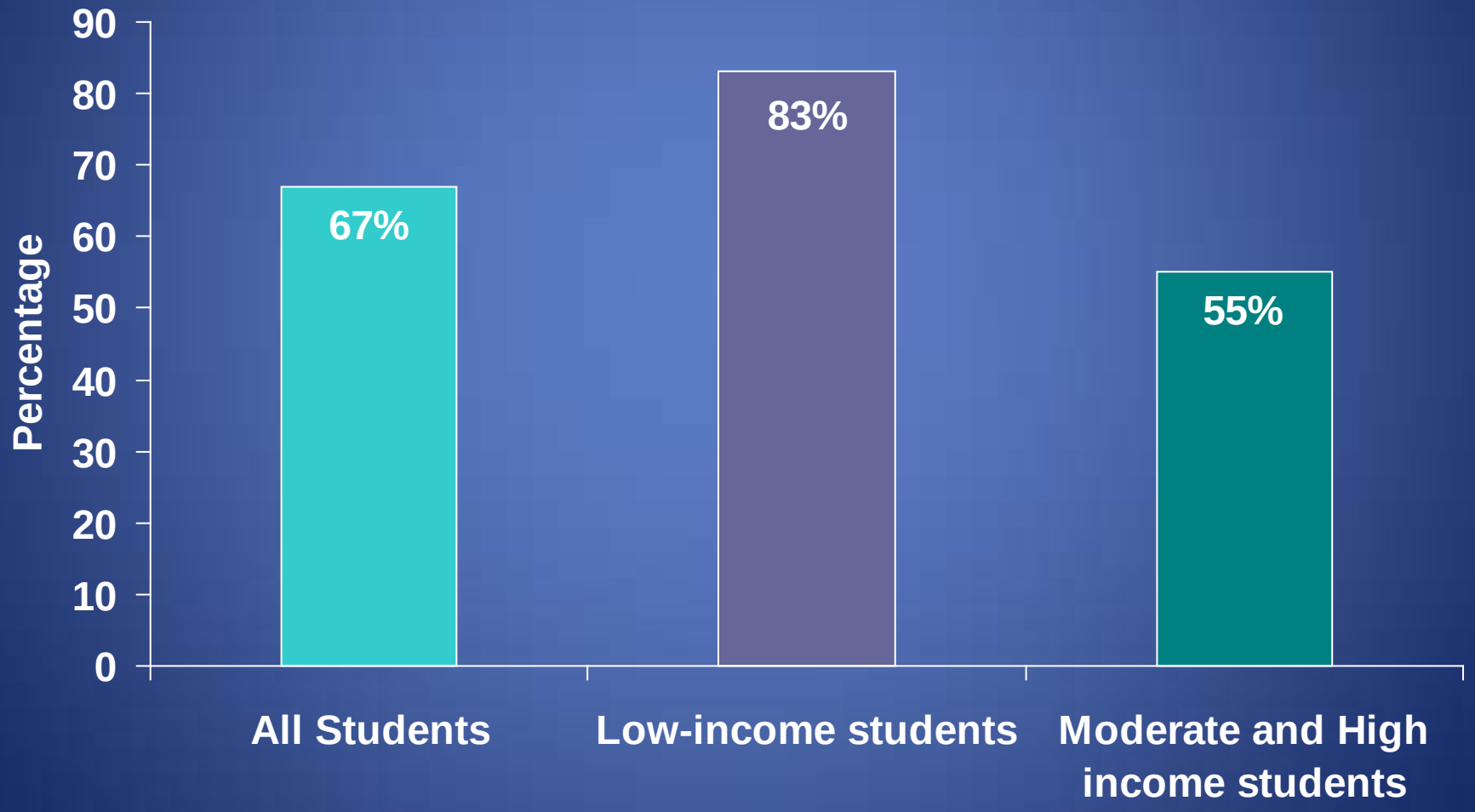
- Language and literacy skills
- Math and science skills
- Executive function and attention
- Conscientiousness and perseverance
- Behavioral regulation (aggression & depression)
- Relationships and connection
- Health

Children Under Age 6 Living in Low-Income Families, 1997-2009



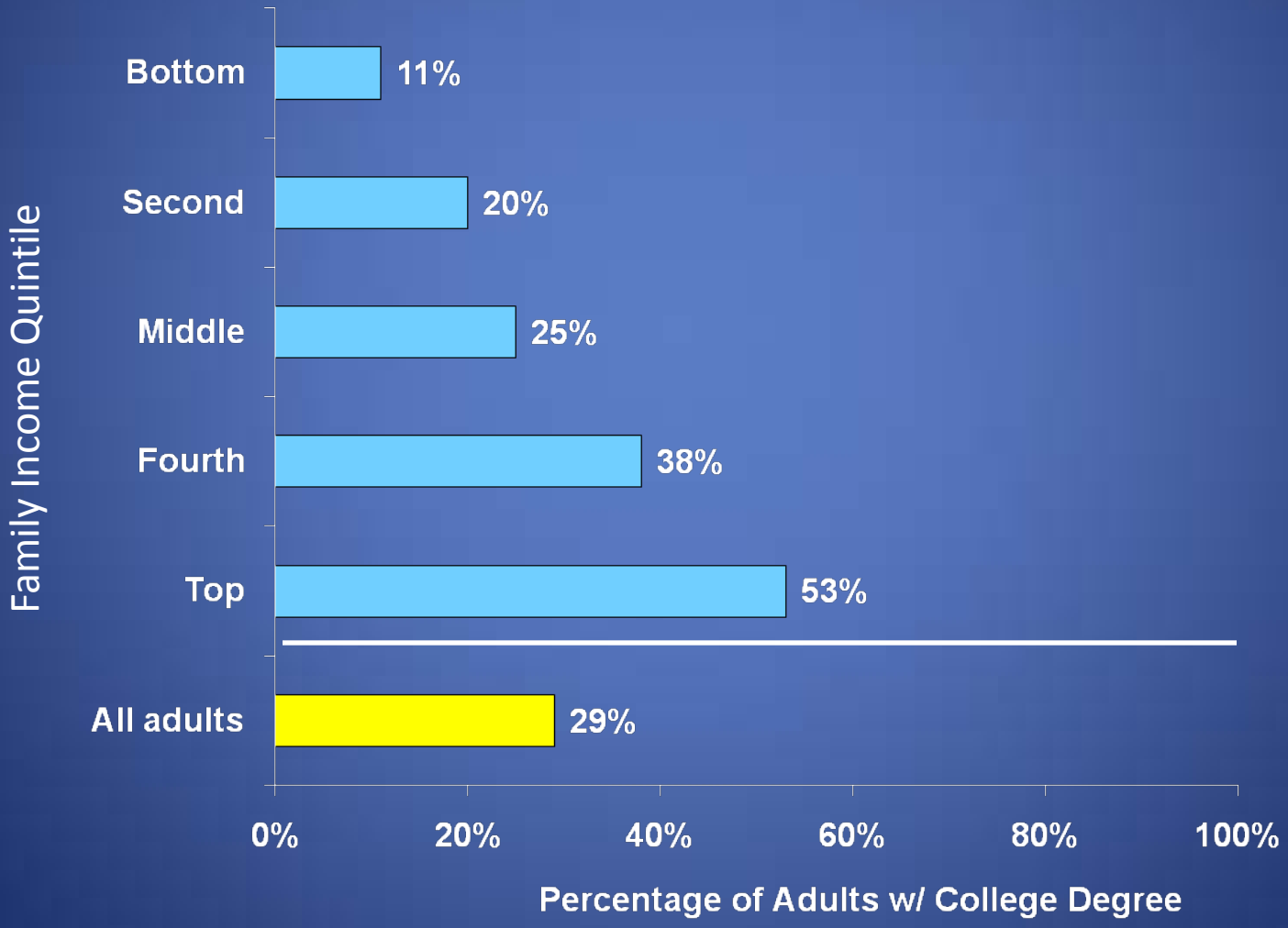
Basic Facts About Low-income Children, 2009: Children Under Age 18. National Center for Children in Poverty, Columbia University

Percent of 4th Graders Scoring Below Proficient by Family Income



Source: Council on Foundations, The Campaign for Grade Level Reading

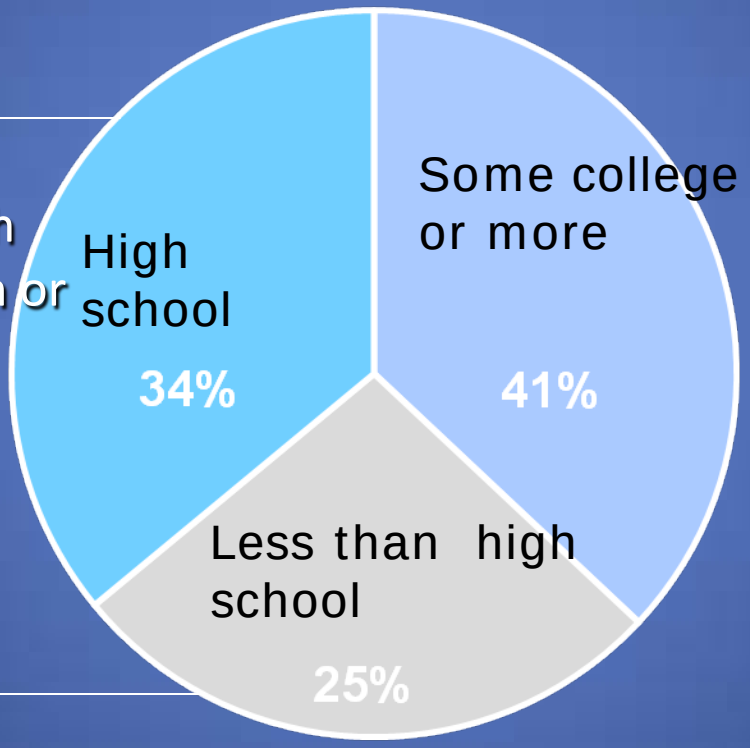
Socioeconomic Disparities in U.S. Postsecondary Degree Completion



Graph from Isaacs et al., 2008; Brookings tabulation of PSID data from 2005

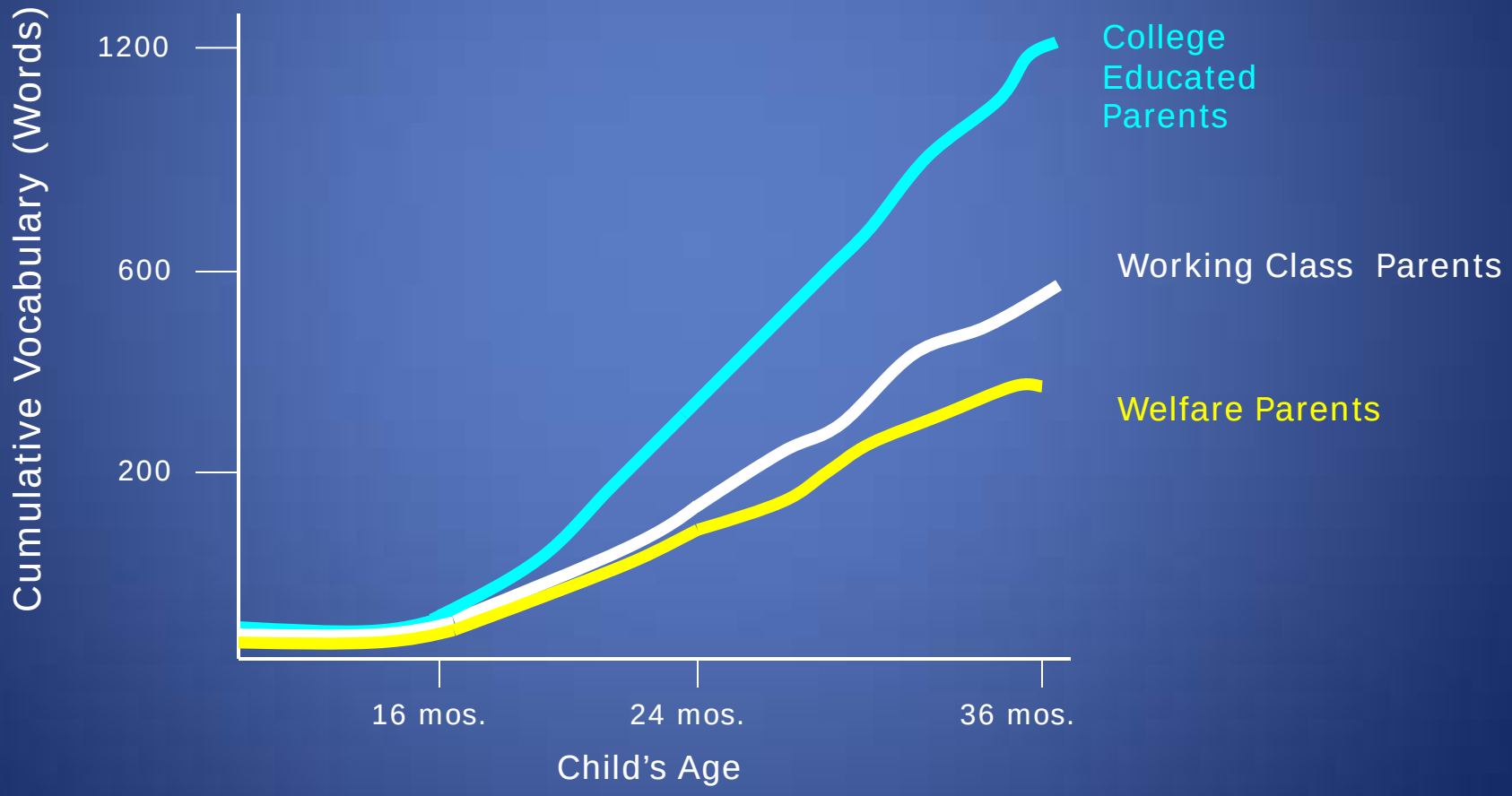
Children Under 6 in Low-Income Families, by Parent Education, 2009

59% of parents with high school education or less



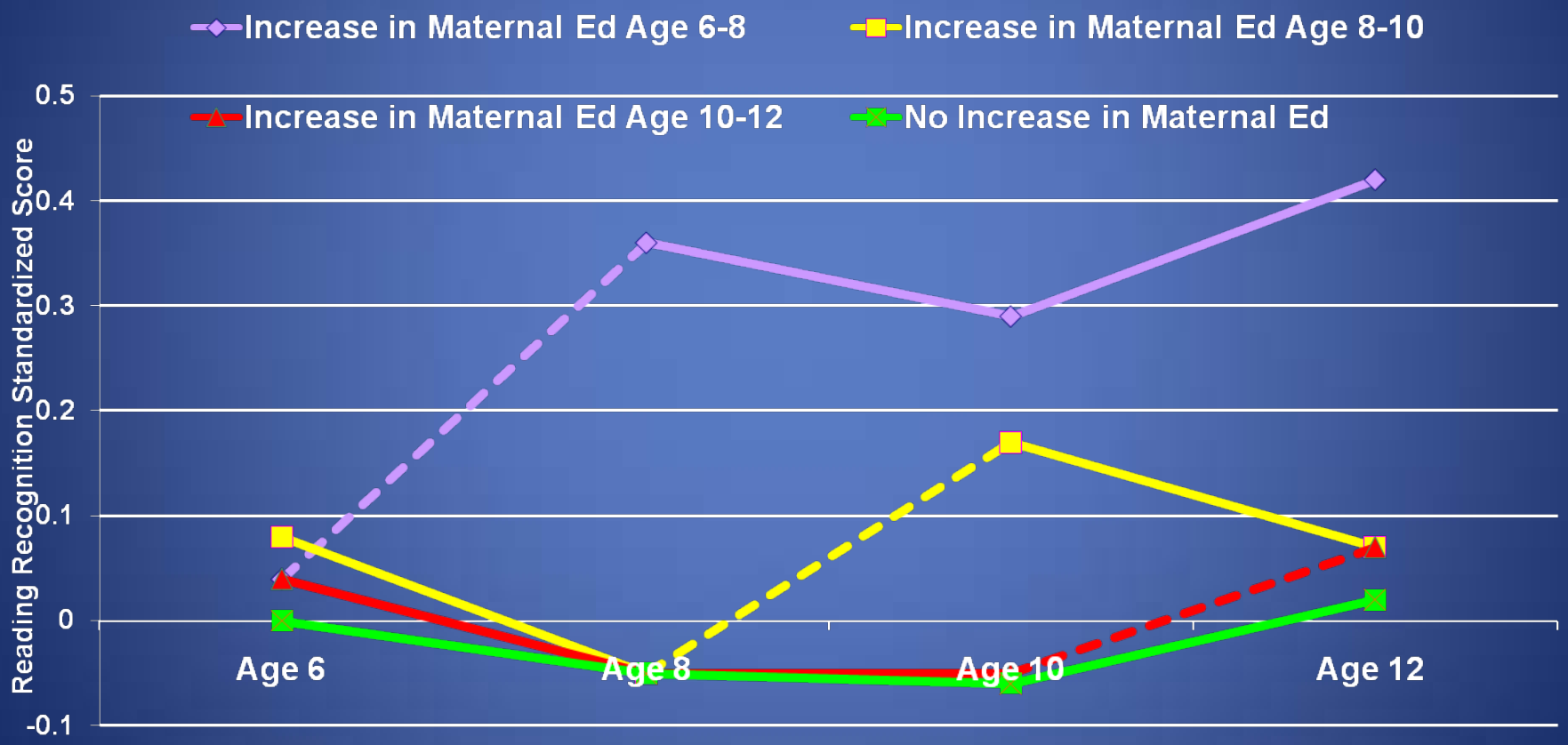
Basic Facts About Low-income Children, 2009: Children Under Age 18. National Center for Children in Poverty, Columbia University

Disadvantage and Child Development



Hart & Risley, 1995

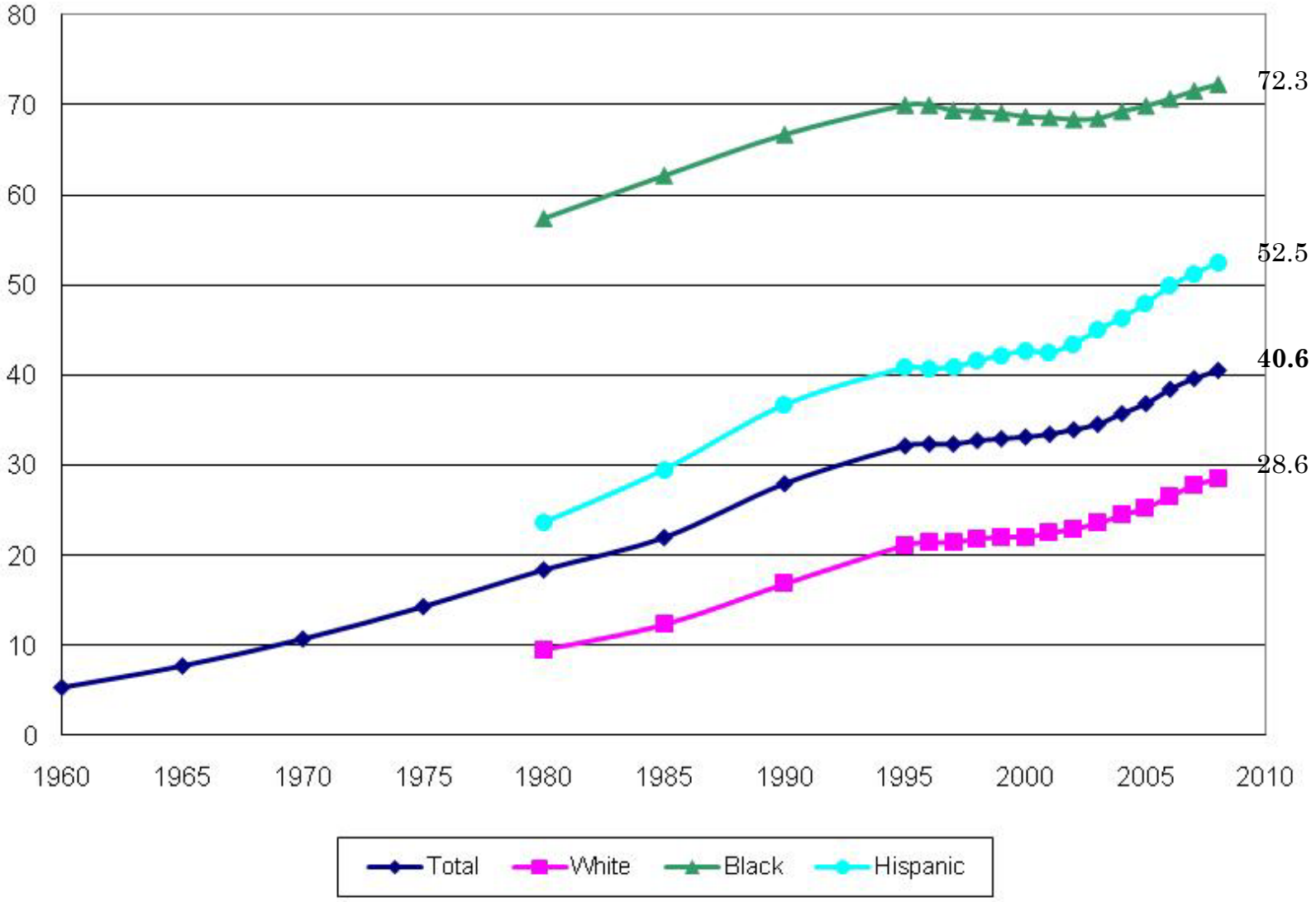
When Mothers Increase Their Education, Children's Learning Improves



Dashed Lines reflect the time period during which mother's education increased

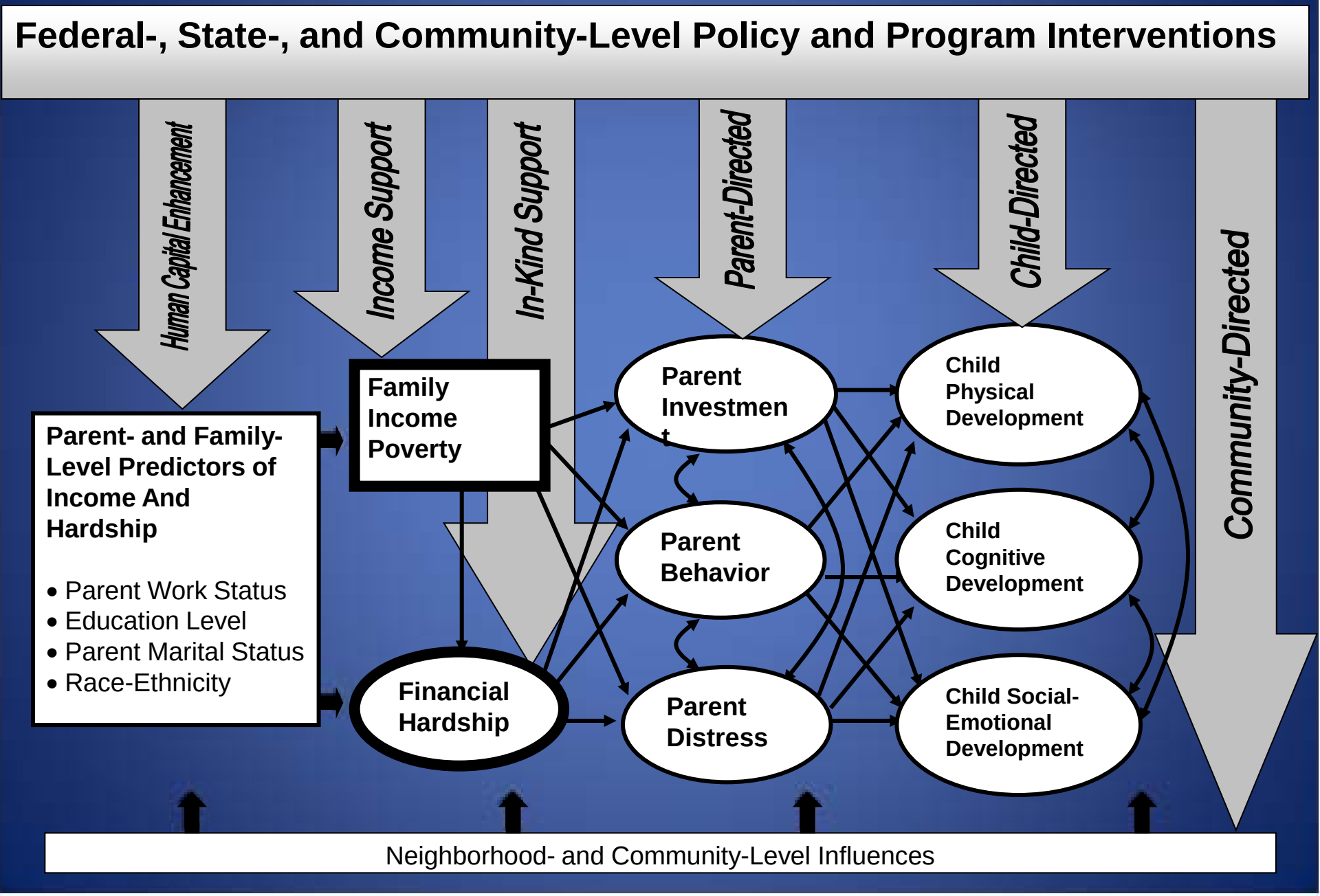
Magnuson,K. (2007).

Unmarried Births as a Percent of All U.S. Births



Source: National Center for Health Statistics

Policies and Programs



Design of the Infant Health & Development Program (IHDP)

- Low birth weight (≤ 2500 grams), premature (≤37 weeks GA) infants
- Born at 8 medical centers in 1985 (Arkansas, Albert Einstein, Harvard, Miami, Pennsylvania, Texas, Washington, Yale)
- Random assignment to one of two groups after birth
- Intervention services from neonatal discharge to age 3
- Stratification by birth weight group: lighter (≤2000 g; 63%) and heavier (2001-2500 g; 37%) LBW

Intervention Services in the IHDP

- **Follow-up Only Group (2/3 of sample)**
  - **Frequent Pediatric Surveillance (Approximately every 3-6 months)**
  - **Referral for Health and Social Services**
- **Intervention Group (1/3 of sample)**
  - **Home Visits (Every week until 12 months, then every other week)**
- **Partners for Learning Curriculum**
  - **Parent Problem Solving**
  - **Social Support**
- **Child Developmental Centers (5 days/week, 8 hours/day, 12-36 months)**
  - **Partners for Learning**
  - **Parent Support Groups**
  - **Parent Education**
  - **Social Support**

Infant Health & Development Program: Impacts from Age 3 to 18

	IQ	PPVT
3 Years	**14.3**	**9.4**
5 Years	**3.7**	**6.0**
8 Years	**4.4**	**6.7**
18 Years	**3.3**	**5.1**

- Heavier low birth weight children only
- All impacts were significant

Brooks-Gunn et al., 1994, *JAMA*; McCarton et al., 1997, *JAMA;* Table 3 & 4, McCormick et al., 2006, *Pediatrics*

Infant Health & Development Program: Impacts on Math Achievement

	WJ Math
8 Years	**4.9**
18 Years	**3.6**

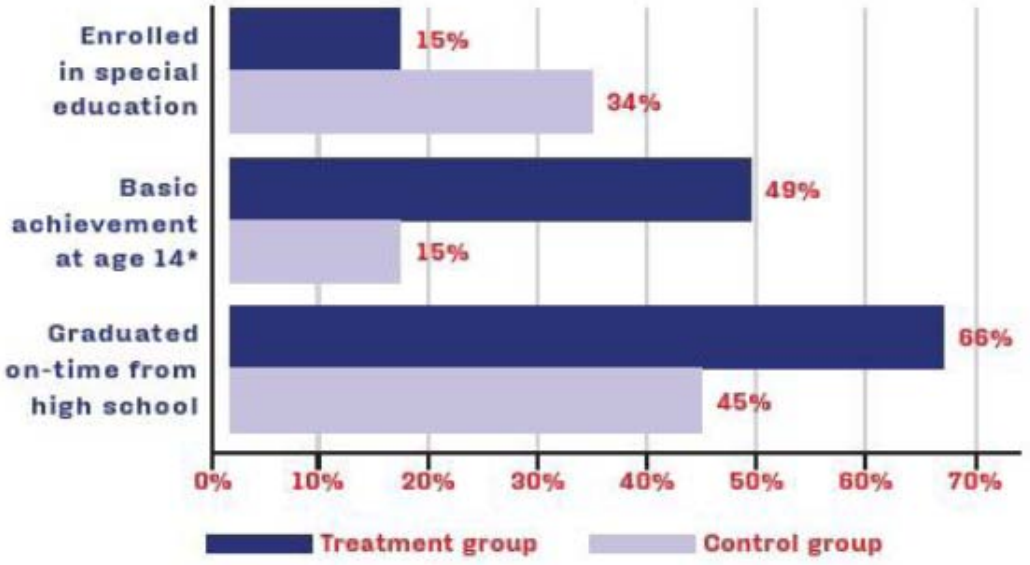
- Heavier low birth weight children only
- All impacts were significant

Brooks-Gunn et al., 1994, *JAMA*; McCarton et al., 1997, *JAMA;* Table 3 & 4, McCormick et al., 2006, *Pediatrics*

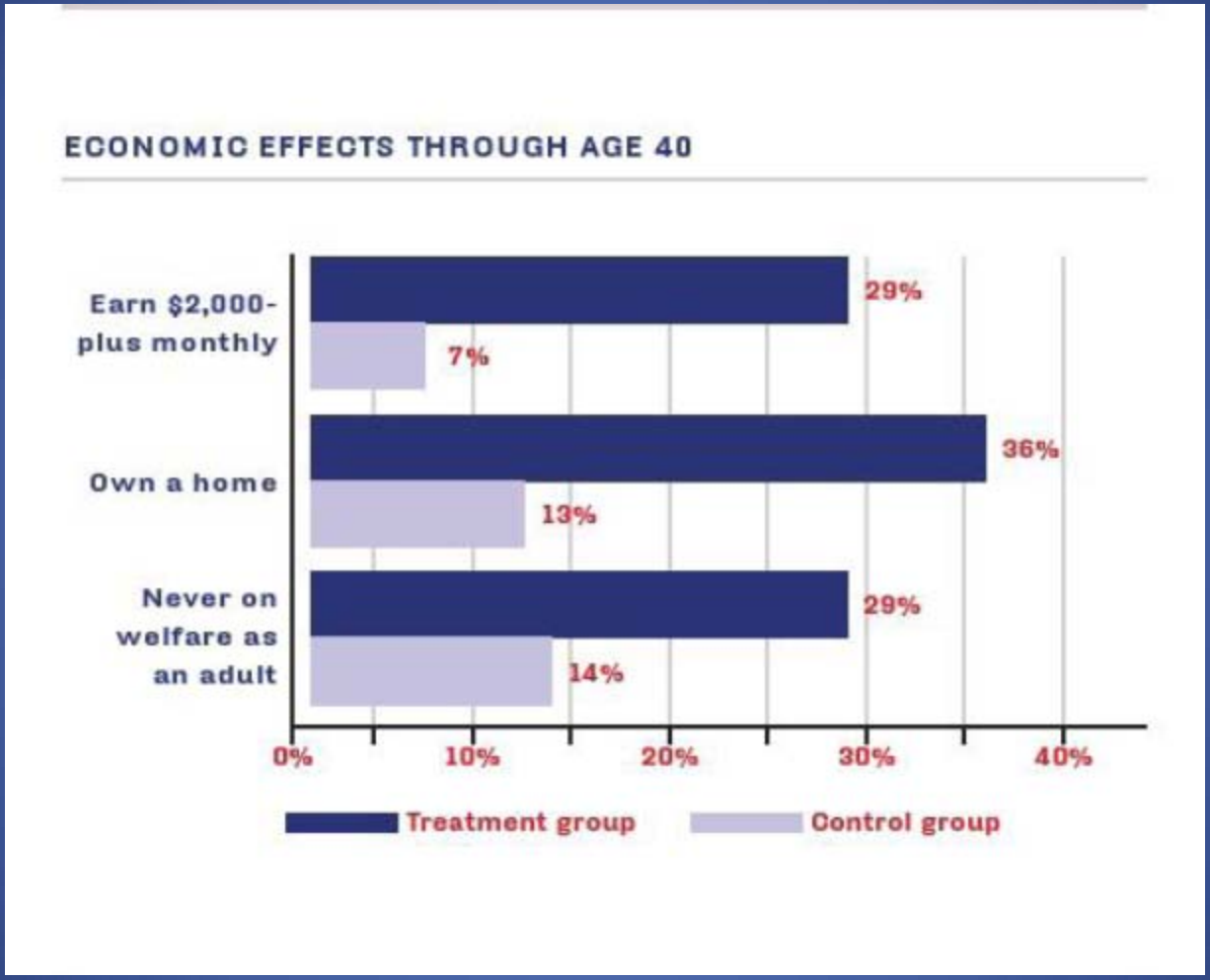
FIGURE 4

Effects of the Perry Preschool Project

EDUCATIONAL EFFECTS

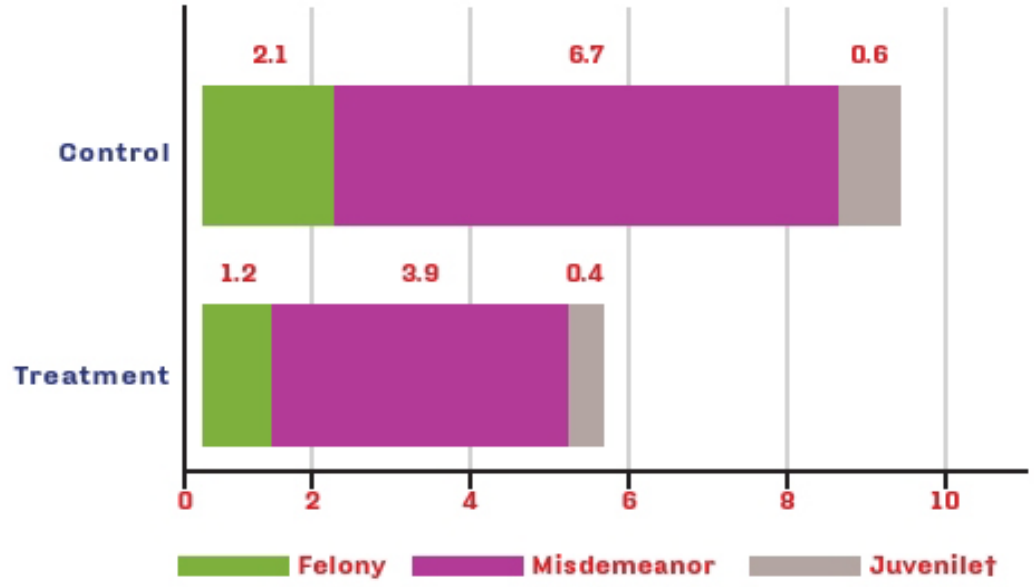


W.S. Barnett, “Benefit-Cost Analysis of Preschool Education.” 2004. “Basic achievement defined as performance at or above the lowest 10th percentile on the California Achievement Test (1970) +Arrests prior to age nineteen



W.S. Barnett, “Benefit-Cost Analysis of Preschool Education.” 2004. “Basic achievement defined as performance at or above the lowest 10th percentile on the California Achievement Test (1970) +Arrests prior to age nineteen

ARRESTS PER PERSON THROUGH AGE 40



SOURCE: W.S. Barnett, "Benefit-Cost Analysis of Preschool Education." 2004. *Basic achievement defined as performance at or above the lowest 10th percentile on the California Achievement Test (1970). †Arrests prior to age nineteen.

Achievement gains (standard deviation units) from Recent Preschool Evaluations.

	8 State	Head Start
Cognitive Language	.23	.09 (.13)
Math	.31	.12 (.18)

Table Notes

- Head Start Impact Study used a Randomized Trial, 8 State used a regression discontinuity design.
- Estimates for the Head Start Impact Study are presented in parentheses with cross-over adjustments.

From NIEER (National Institute for Early Education Research); Barnett, July 2011

Reasons for Smaller Effect Sizes

1. Teacher Education
2. Quality of Preschool
3. Amount of Preschool
4. Counterfactual
5. Risk

Achievement gains (standard deviation units) in Tulsa and Head Start Studies

	Tulsa Public School	**Tulsa Head Start**	**Head Start Impact Study**
Letter-word	.99	.51	.22 (.34)
Math	.36	.37	.12 (.18)

- Estimates for the Head Start Impact Study are presented in parentheses with cross-over adjustments.
- Tulsa Head Start uses public school teachers, unlike Head Start and like Tulsa Public Schools

From NIEER (National Institute for Early Education Research); Barnett, July 2011

Quality of Different Child Arrangements

	ECERS > 5	**CLASS > OK avg.**
Head Start	24	21
Child Care	7	14
Private School	10	23
Private Pre-K	19	19
State Pre-K	42	34

From Karoly et al. (2008). Prepared to Learn. RAND. Data from California. Cited by Barnett, 2011 (NIEER).

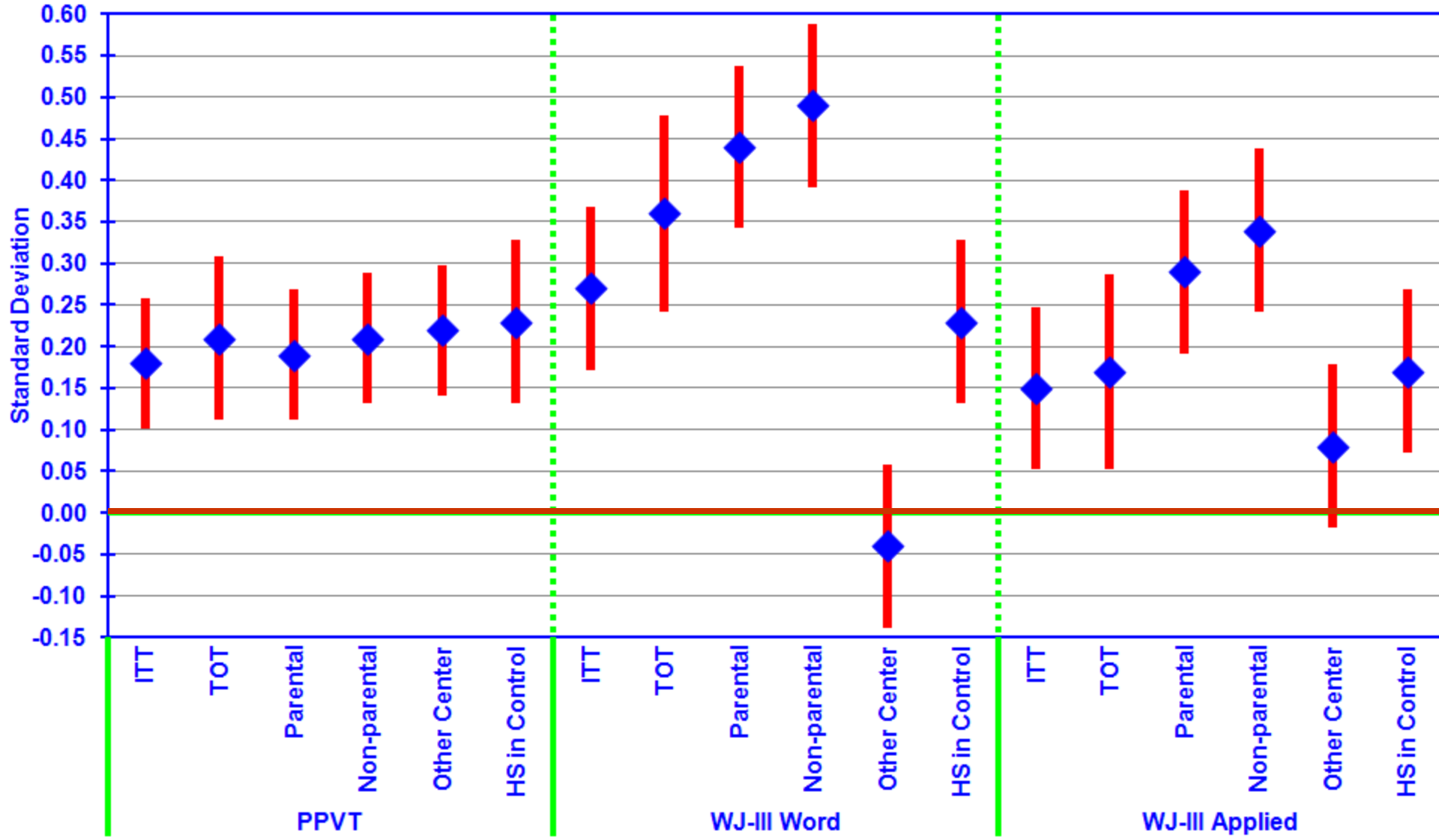
Infant Health & Development Program: Impacts As A Function Of Number Of Days Of Center-Based Care

	Total Sample	>350 days of treatment over 2 years
Age 3		
IQ	14.3	16.7
Age 8		
IQ	4.4	8.4

*Heavier low birth weight children only

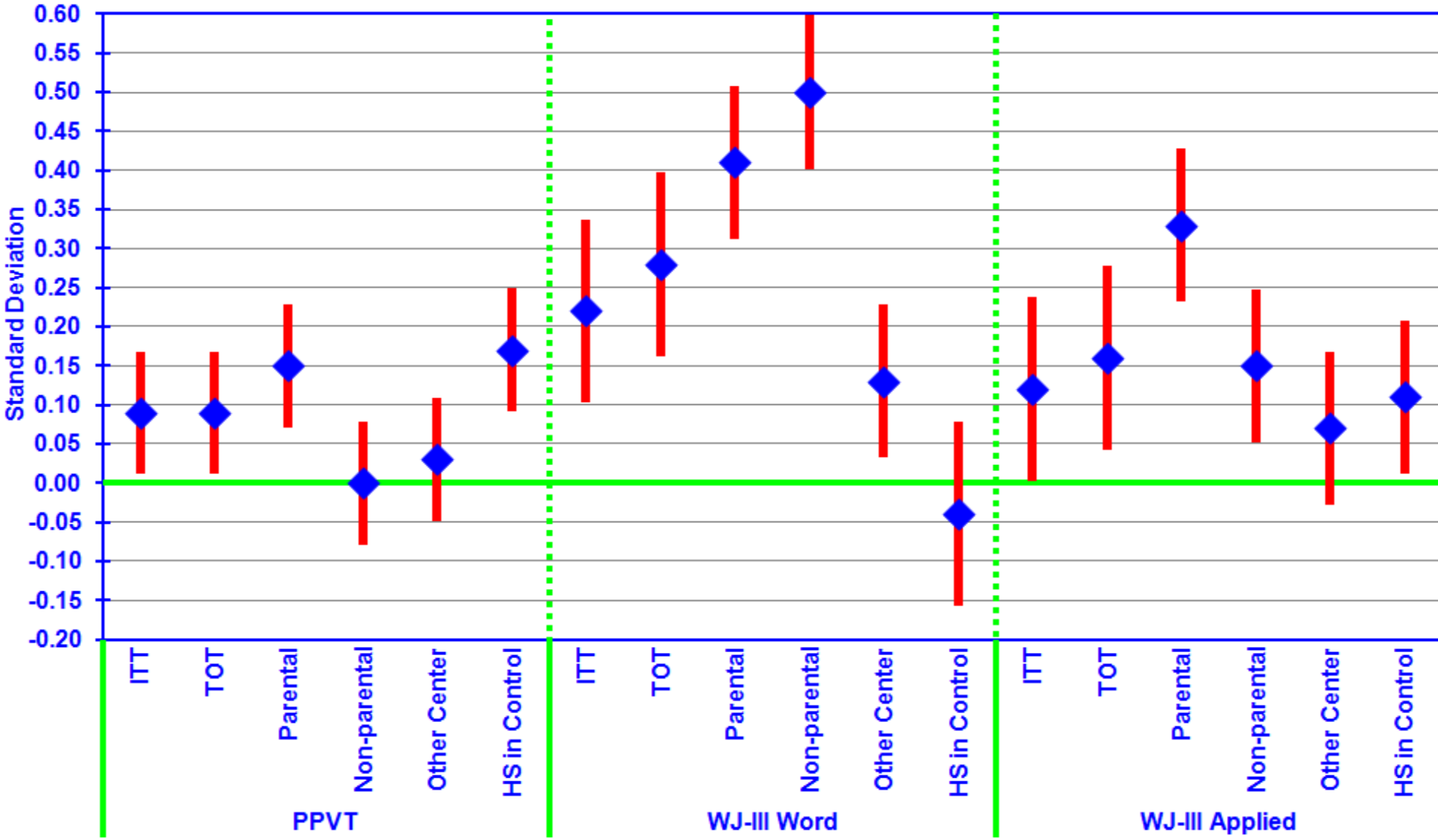
Hill, Brooks-Gunn, Waldfogel, 2003, *DP*

Cognitive Effects of Head Start: 3-year-cohort



Analysis of Head Start Impact Study; Zhai, Waldfogel, Brooks-Gunn, 2012

Cognitive Effects of Head Start: 4-year-cohort



Analysis of Head Start Impact Study; Zhai, Waldfogel, Brooks-Gunn, 2012

- **Dots represent point estimates and red lines represent 95% confidence intervals;**
- **Red lines not crossing X-axis (Y=0): estimates significant at *p* <0.05; non-significant otherwise;**
- **No overlaps between red lines: significantly different at *p* <0.05; no statistical differences otherwise.**

Analysis of Head Start Impact Study; Zhai, Waldfogel, Brooks-Gunn, 2012

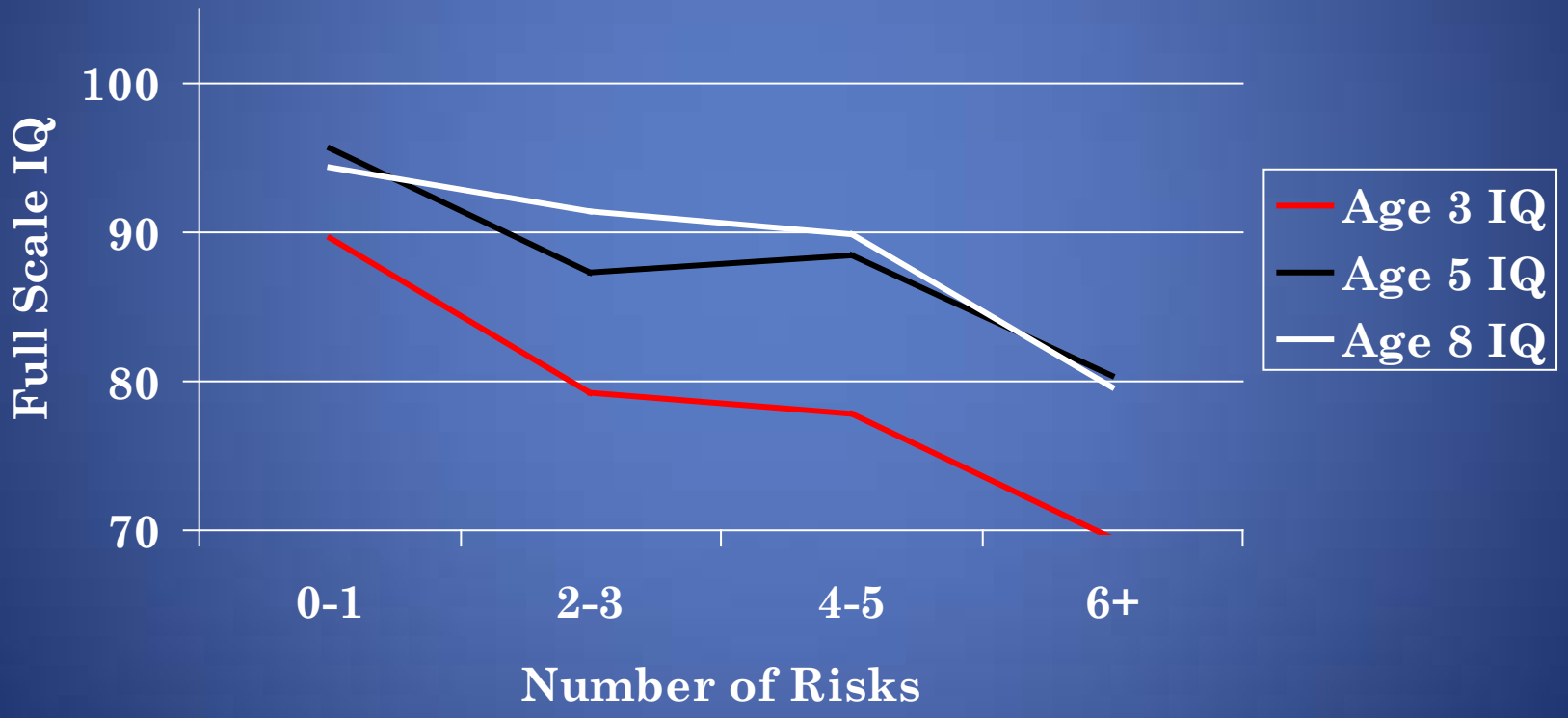
What is Risk?

- Biological and environmental conditions that increase the likelihood of negative outcomes
- Epidemiological research on risk factors in heart disease (Framingham Study)
- Mortality and morbidity increases with the accumulation of risk factors

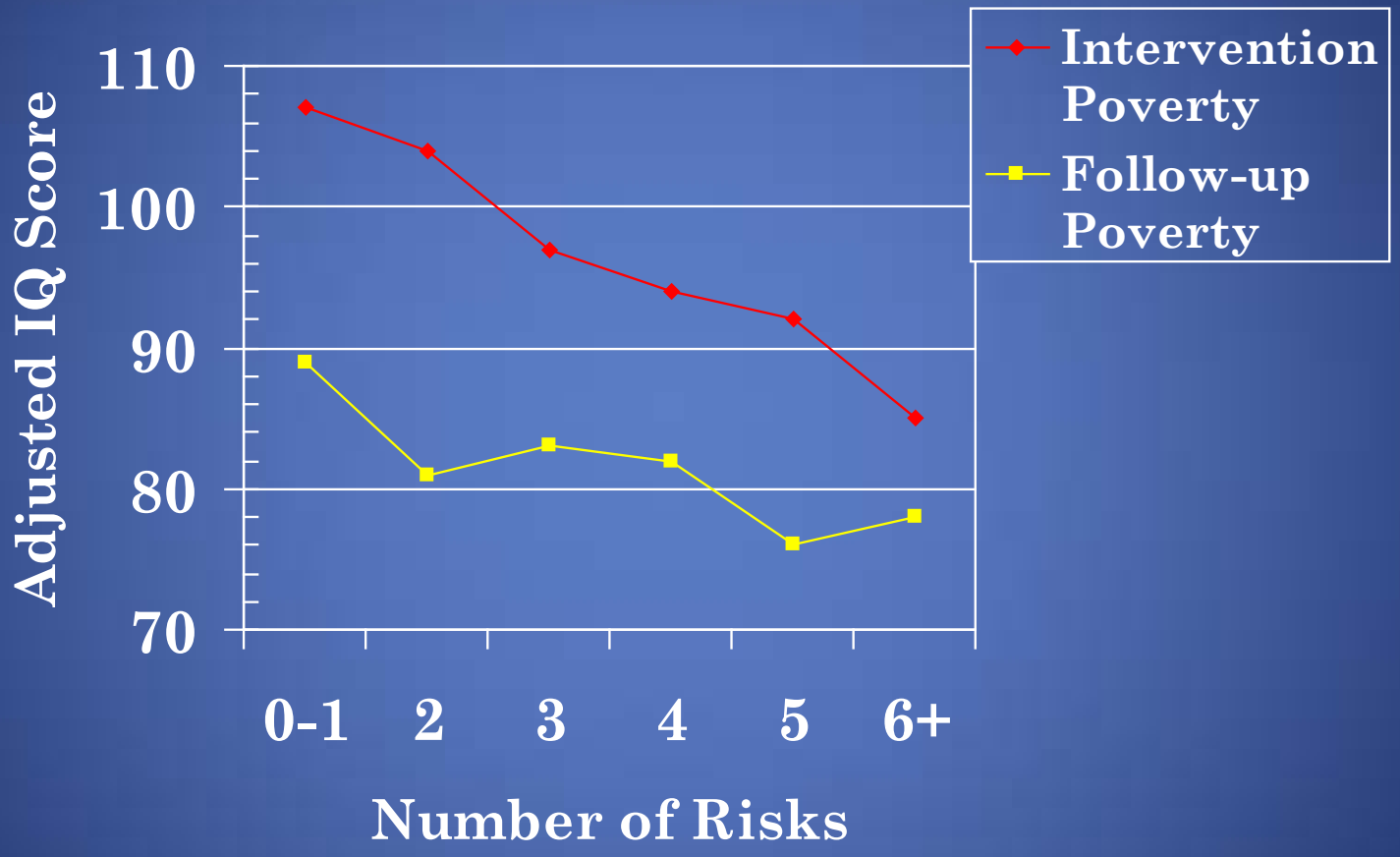
Our First Foray into Cumulative Risk Analyses: 1990s the Infant Health and Development Program

- Liaw & Brooks-Gunn (1994) examined the prevalence, contributions, and cumulative effects of 13 risk factors separately for poor and nonpoor families
- Sample consisted of 704 children with complete data for family income and all 13 risk factors
- Poor families had 12 month family income to needs ratio less than 150% (56.4%) Nonpoor families had 12 month family income to needs ratios at or above 150% (43.6%)
- Outcomes: Children's cognitive test scores (Stanford-Binet) and behavior problems (CBCL) at 3 years of age

Risk and IQ Over Time



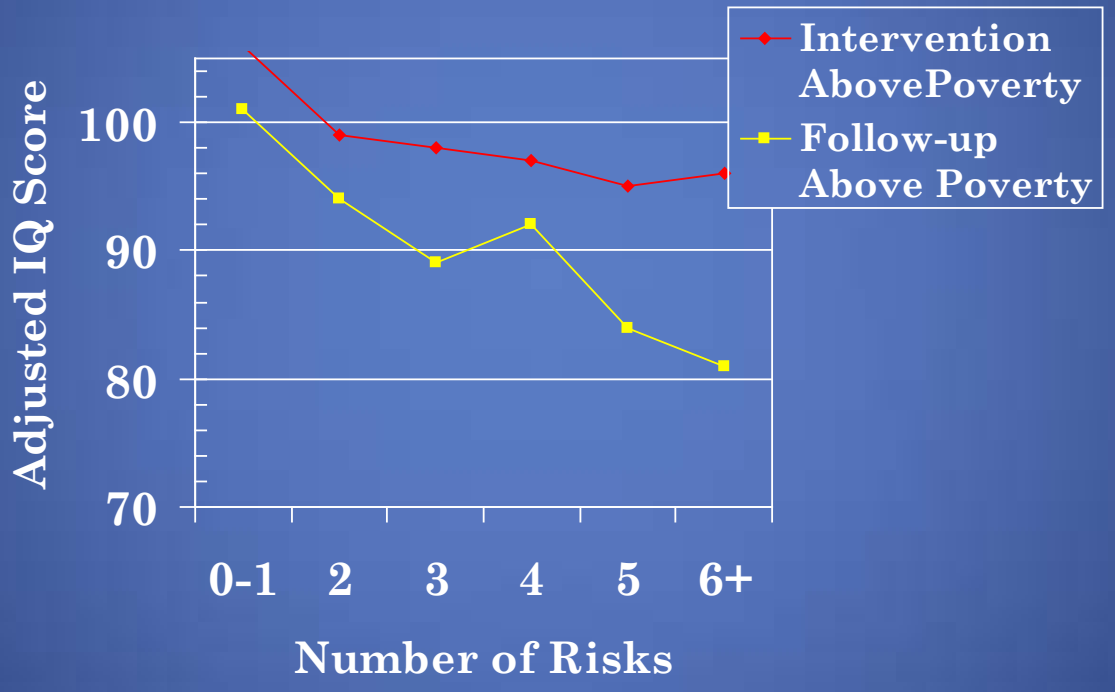
IQ Scores for Poor 3-Year-Olds by Risk and Treatment



Adjusted IQ scores by risk groups and poverty status follow-up-only groups (N r 423).

Liaw & Brooks-Gunn, 1994

IQ Scores for not Poor 3 Year-Olds by Risk and Treatment



Adjusted IQ scores by risk groups and poverty status follow-up-only groups (N r 423).

From Liaw & Brooks-Gunn, 1994

Cumulative risk and early childhood programs: Are all risk factors equal?

- Poverty and income
- Human capital
- Psychosocial factors

Human Capital

- Based on the work by Gennetian using mother's work status, education at the time of the child's birth, and welfare status

- Defined 3 levels of disadvantage:

- 1) Least disadvantaged: Mothers who worked, had a high school degree and were not on welfare
- 2) Highly disadvantaged: Mothers who did not work, had less than a high school degree, and received welfare
- 3) Moderately disadvantaged: Neither least disadvantaged nor highly disadvantaged

Figure 6. Risk x Treatment for Stanford-Binet at Age 3 (Heavier BWG)

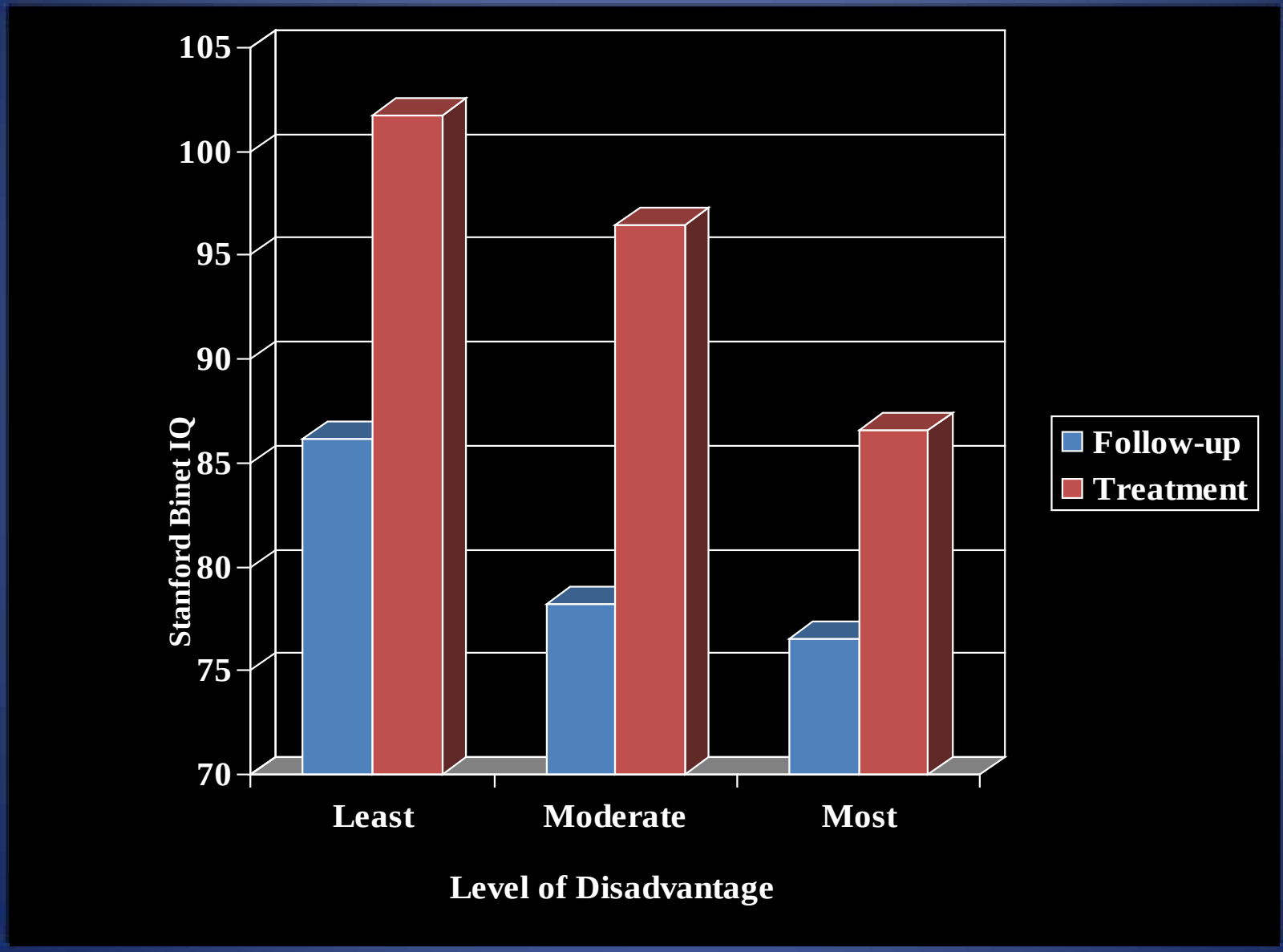


Figure 7: Human Capital Risk x Treatment for WISC at Age 8 (Poor Heavier BWG)