Early Childhood Education
"Fade Out" in Context

Achievement Gap Committee
Wilder Center, St. Paul
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Early childhood education "fade out" in context

- Several long-term evaluations show sustained early childhood education program impacts into adulthood.
- Measures that indicate fade out may not fully capture effects of an early childhood education program, such as impacts on social-emotional skills and executive functioning.
- Even though fade out is detected through early measures, benefits can still be found later in childhood and early adulthood.

Early childhood education "fade out" in context

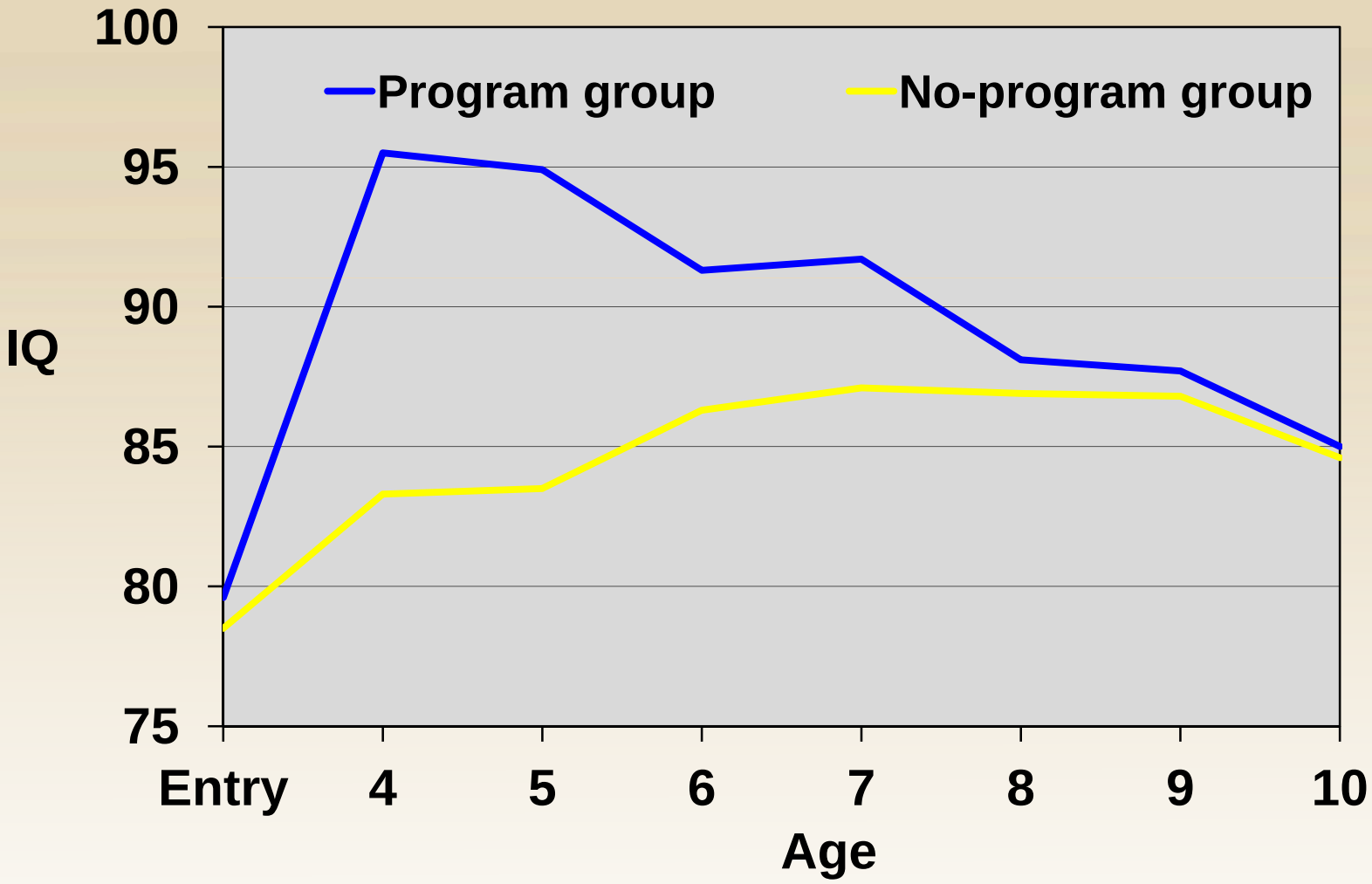
- "Catch up" may be a better descriptor than fade out. Schools focus resources on children who are behind to catch up with children who are on track.
- Measures that indicate fade out show where a program can make improvements.
- School quality is factor in sustaining early childhood education program gains.
- Science of child development provides basis for intervening earlier than later. Alongside K through career education research, early childhood education has a relatively strong research base.

High/Scope Study of Perry Preschool

- In early 1960s, 123 children from low-income families in Ypsilanti, Mich.
- Children randomly selected to attend Perry or control group.
- High-quality program with well-trained teachers, daily classroom sessions and weekly home visits.
- Tracked participants and control group through age 40.

At first it looks like gains from Perry faded

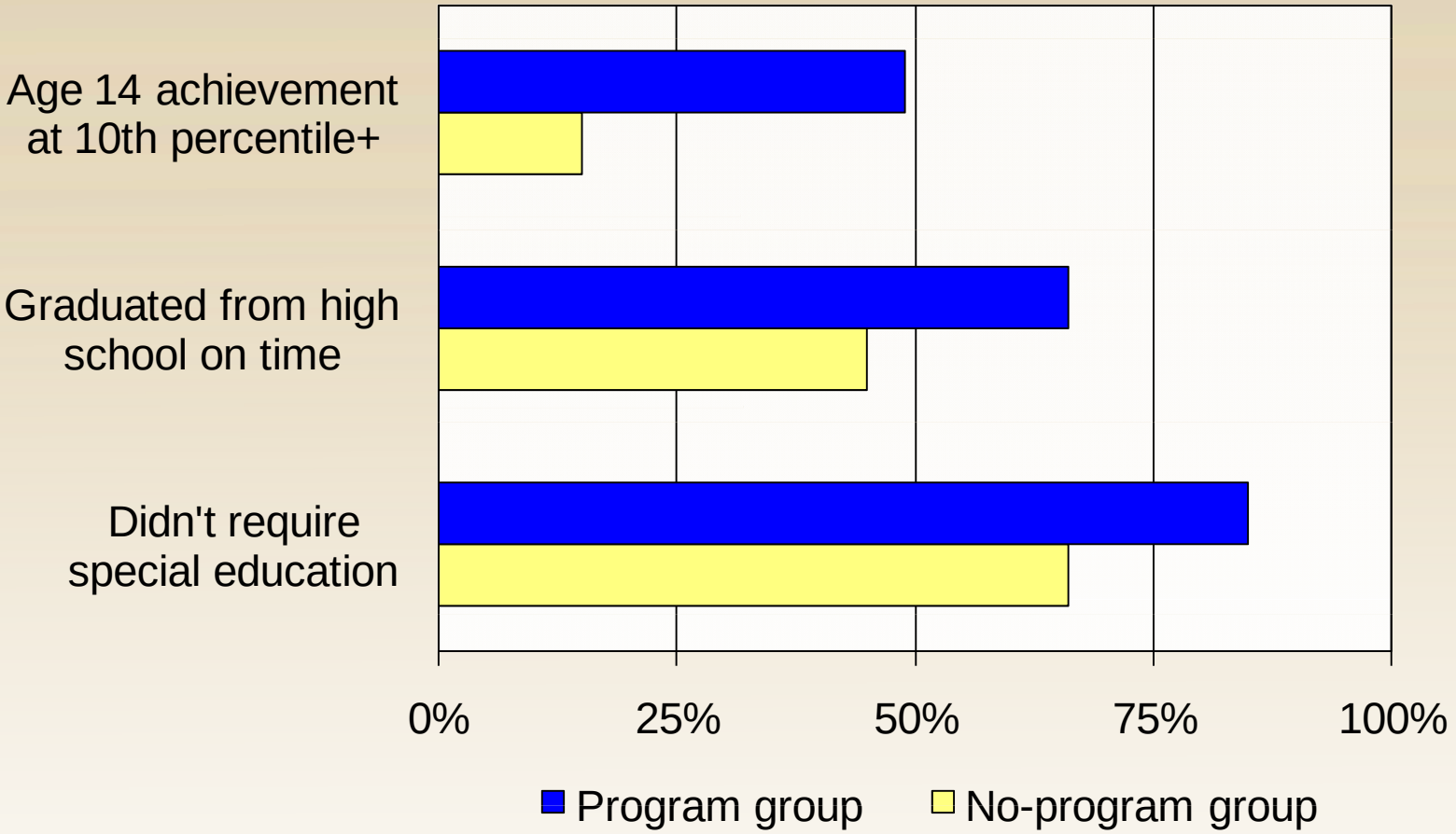
Perry Preschool IQ Over Time



Source: Schweinhart, et al. (2005)

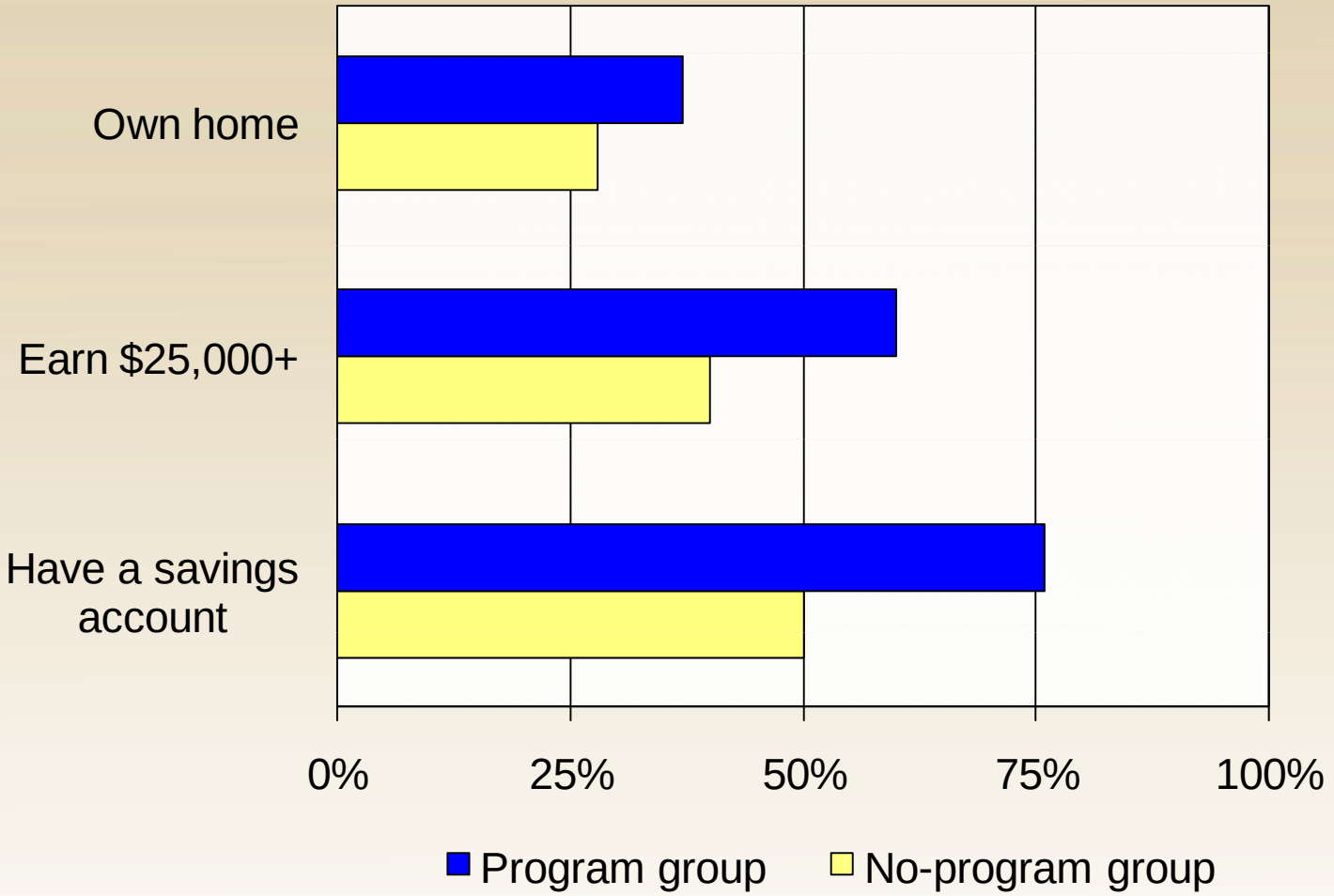
But long-run effects are detected in Perry and other longitudinal studies

Perry: Educational Effects



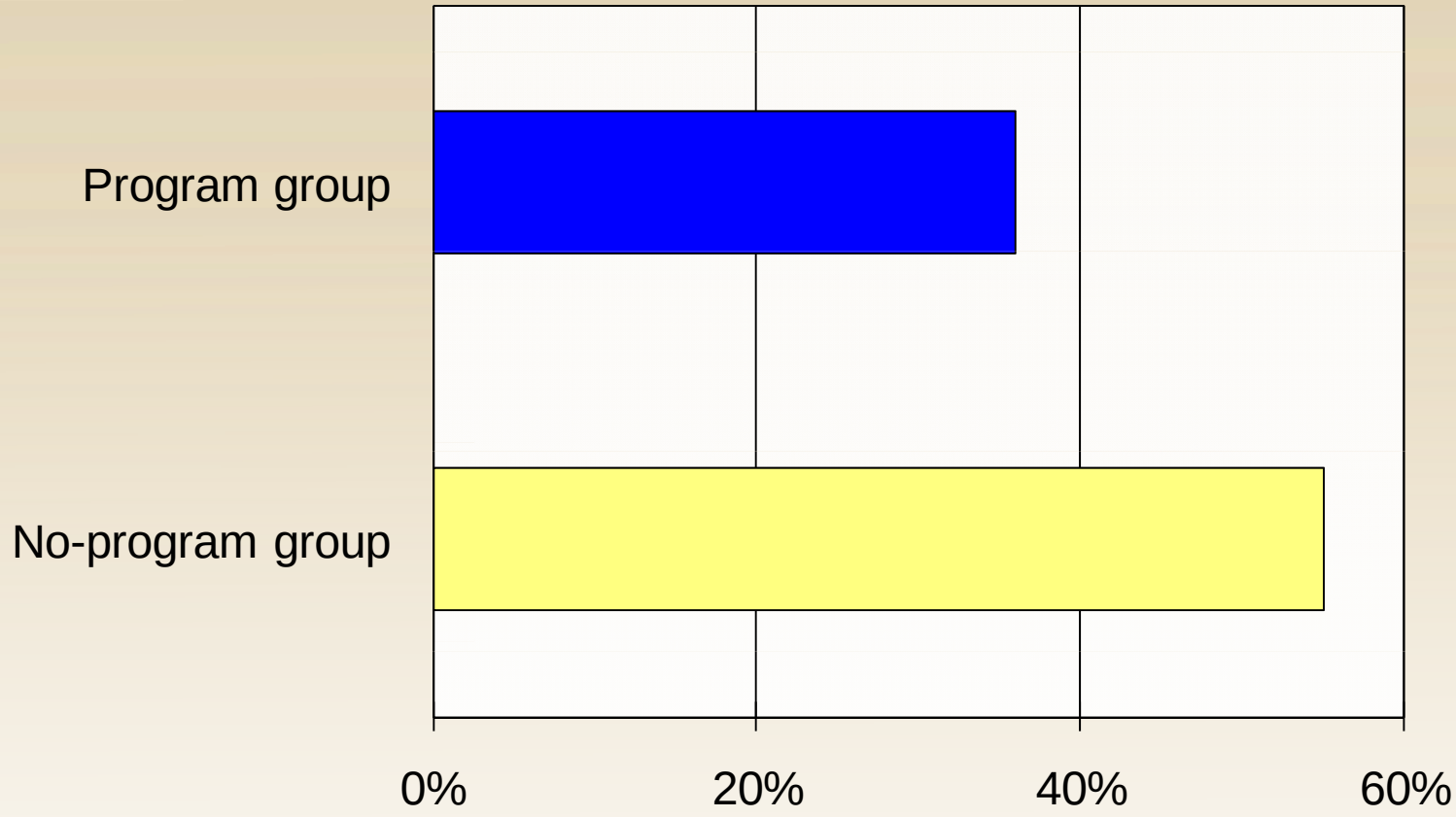
Source: Schweinhart, et al. (2005)

Perry: Economic Effects at Age 40



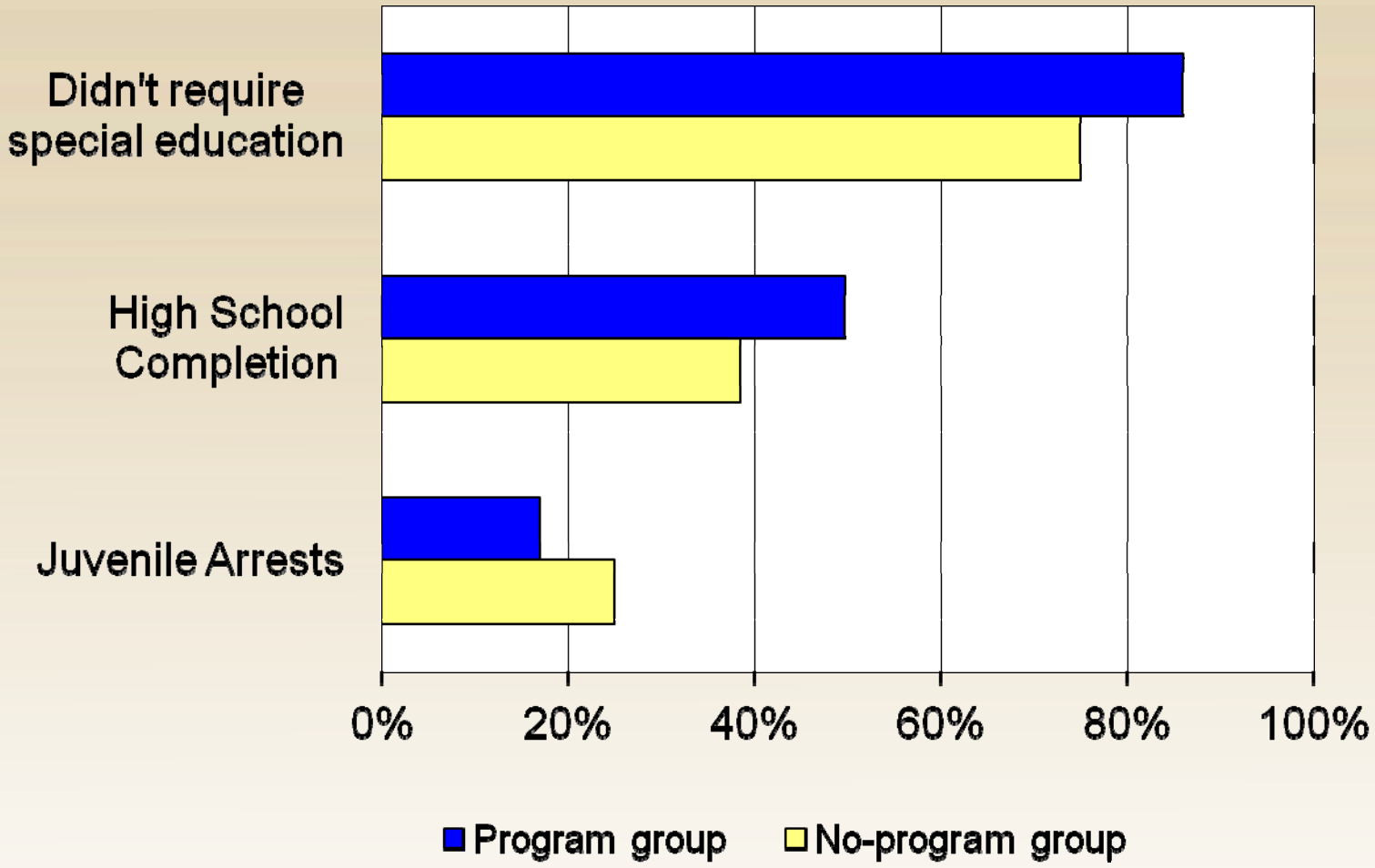
Source: Schweinhart, et al. (2005)

Perry: Arrested 5 or More Times Before Age 40



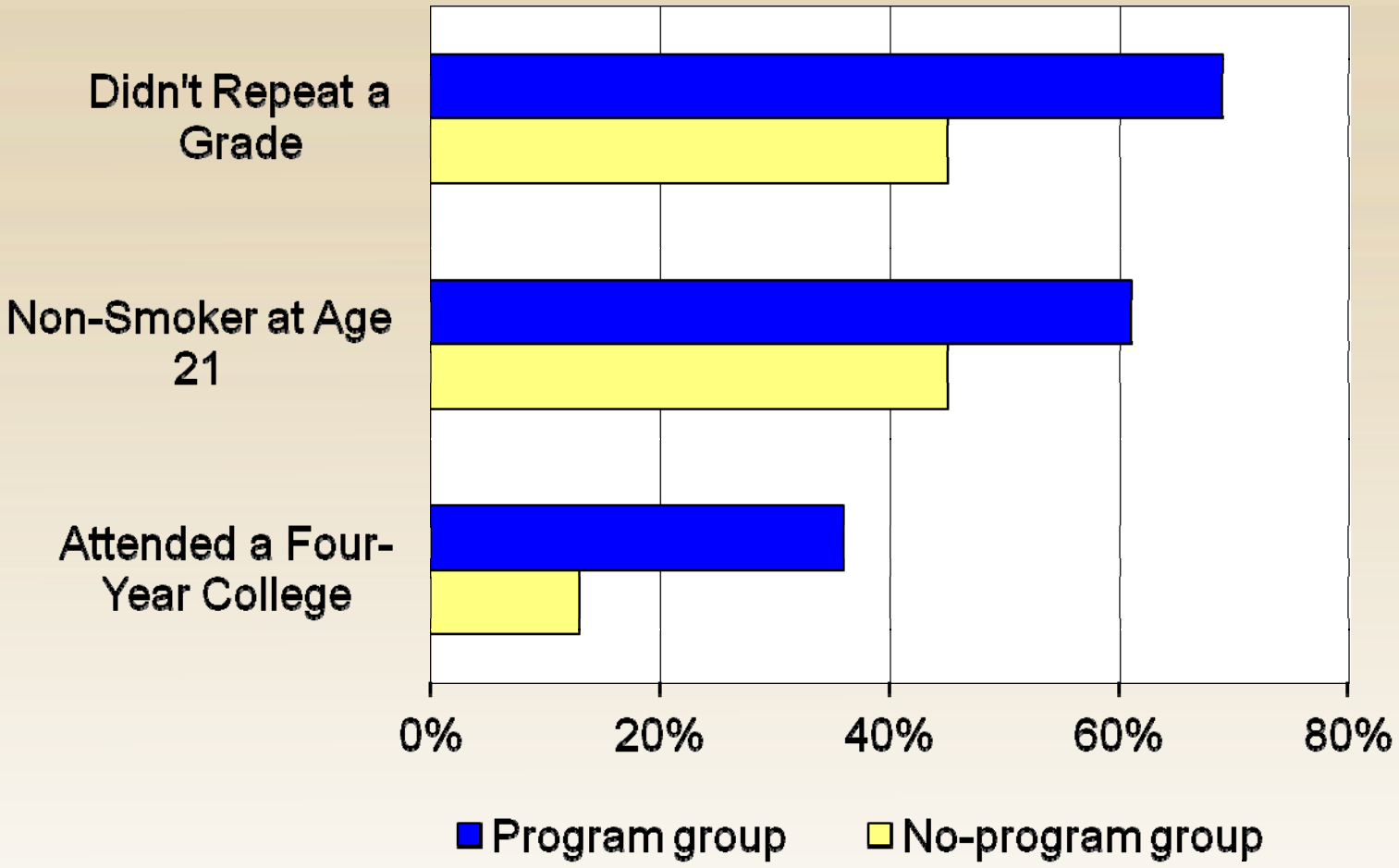
Source: Schweinhart, et al. (2005)

Chicago Child-Parent Centers



Source: Reynolds, Temple, White, Ou, & Robertson (2011)

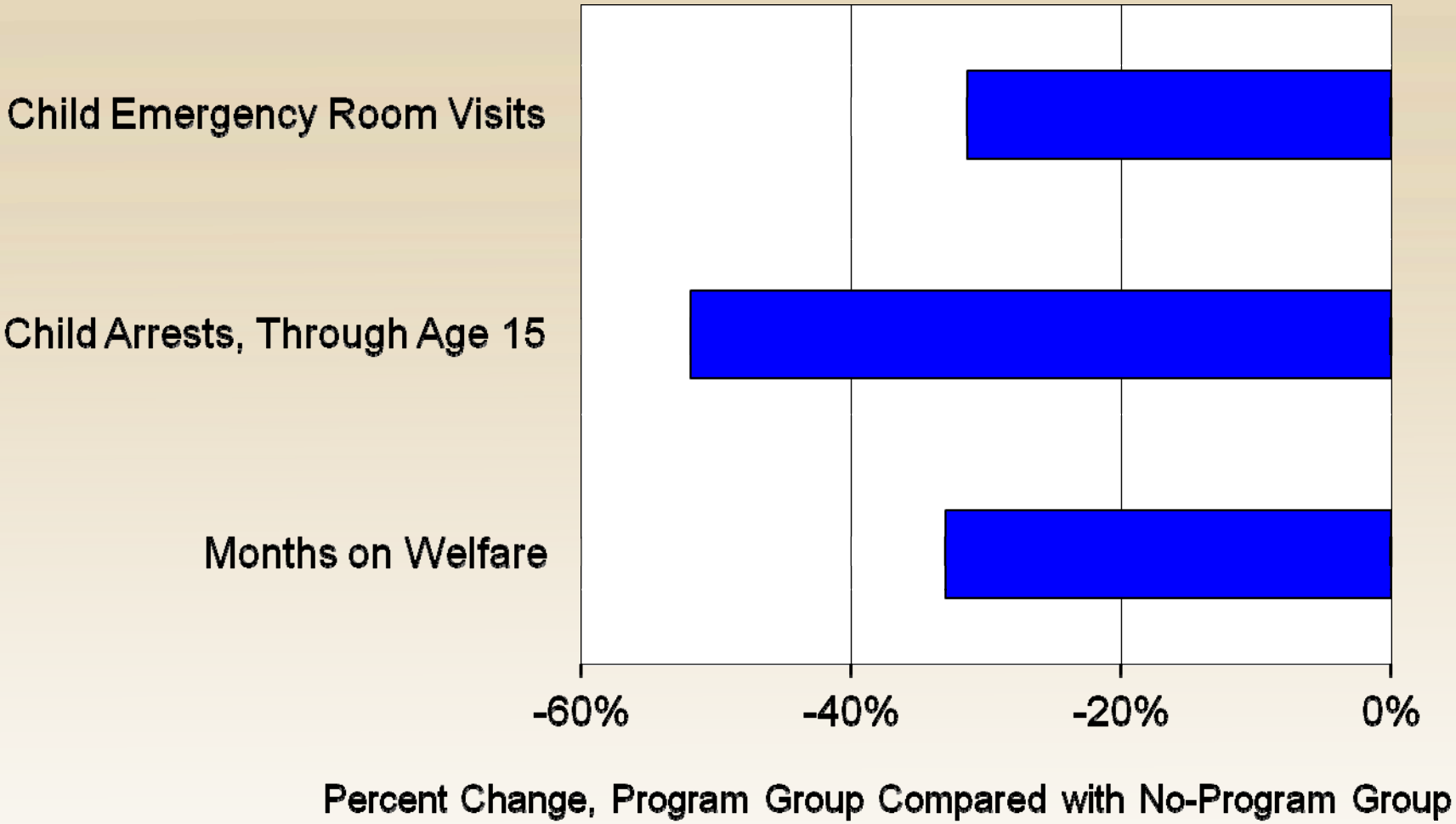
Abecedarian Educational Child Care



Source: Masse & Barnett (2002)

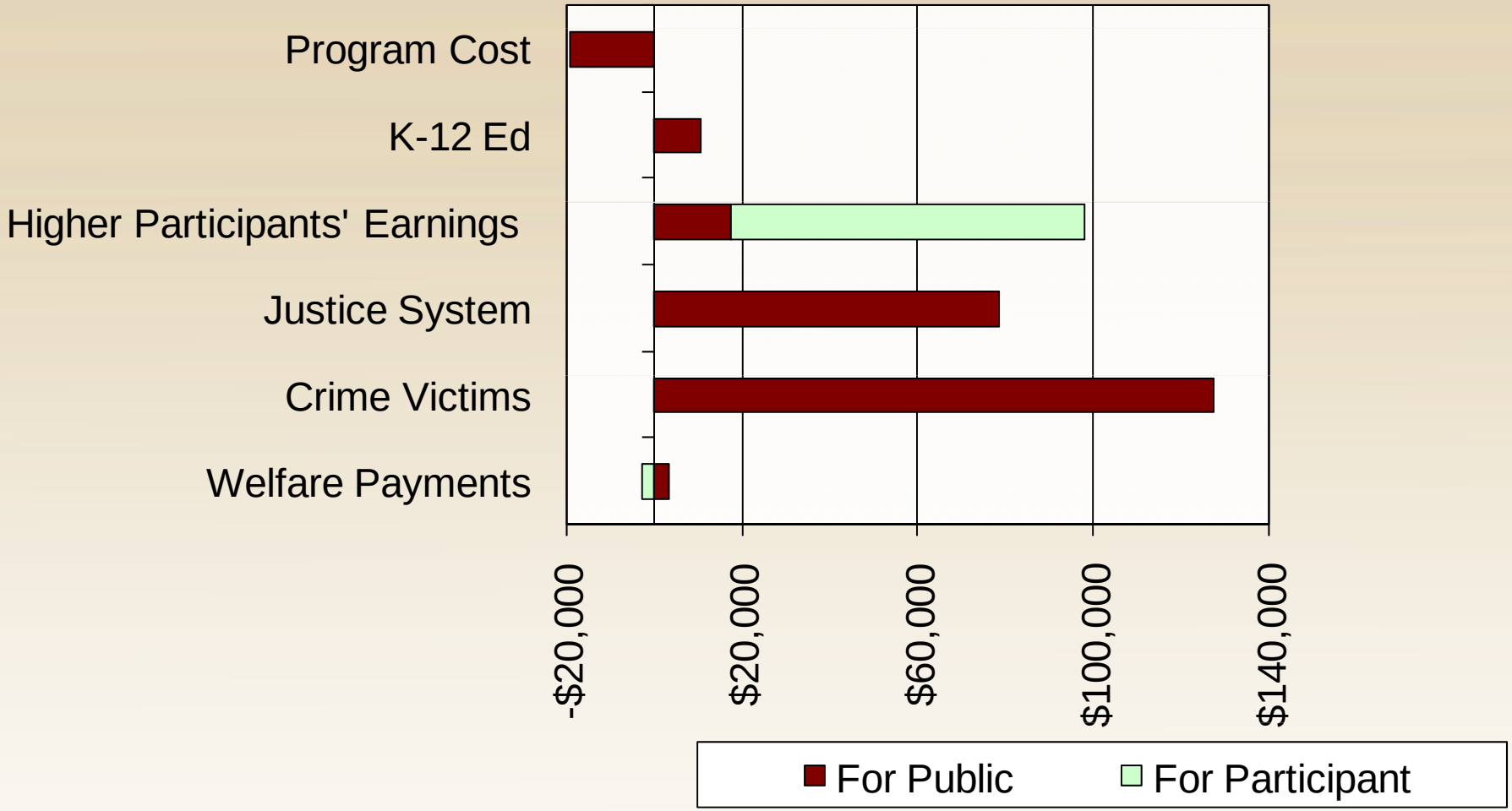
Elmira Prenatal/Early Infancy Project

High-Risk Families



Source: Karoly, et al (1998)

Perry Preschool
Costs and Benefits Over 62 Years



Source: Schweinhart, et al. (2005)

Perry Preschool — Estimated Return on Investment

- Benefit-Cost Ratio = $16 to $1
- Annual Rate of Return = 18%
- Public Rate of Return = 16%
- Heckman Reanalysis = 10%

Sources: Schweinhart, et al. (2005); Author's calculations; Heckman, Moon, Pinto, Savelyez, & Yavitz (2010)

Benefit-Cost Ratios for Other Longitudinal Studies

- Abecedarian Educational Child Care
  - $4 to $1
- Chicago-Child Parent
  - $10 to $1
- Elmira Prenatal/Early Infancy Project
  - $5 to $1

Sources: Masse & Barnett (2002); Reynolds, Temple, White, Ou, & Robertson (2011); Karoly, et al (1998)

Head Start Randomized Control Trial

- "Head Start improved children's preschool outcomes across developmental domains, but had few impacts on children in kindergarten through 3rd grade."

- Measures Intent-to-Treat
  - Includes Head Start enrollees who don't show up
  - 60 percent of the control group children participated in child care or early education programs

Source: Puma, Bell, Cook, Heid, Broene, Jenkins, Mashburn, and Downer (2012)

Positive small and medium effects after 1 year, few effects after entering school

Exhibit 2a. Summary of ITT Cognitive Impacts for 4-Year-Olds by Year

Measure	Age 4 (Head Start Year)	K	1st Grade	3rd Grade
Language, Literacy, and Pre-Writing				
Color Identification	**0.16**	NA	NA	NA
Pre-Writing (McCarthy Draw a Design)		NA	NA	NA
Emergent Literacy Scale (parent report)	**0.31**	NA	NA	NA
Letter Naming	**0.25**		NA	NA
Test of Phonological Processing (CTOPPP Elision)			NA	NA
Receptive Vocabulary (PPVT)	**0.09**		**0.09**	
Letter-Word Identification (WJIII)	**0.22**			
Spelling (WJIII)	**0.15**			NA
Oral Comprehension (WJIII)				NA
Pre-Academic Skills (WJIII)	**0.19**			NA
ECLS-K Reading	NA	NA		**0.11**

Source: Puma, Bell, Cook, Heid, Broene, Jenkins, Mashburn, and Downer (2012)

Positive small and medium effects after 1 and 2 years, few effects after entering school

Exhibit 2b. Summary of ITT Cognitive Impacts for 3-Year-Olds by Year

Measure	Age 3 (Head Start Year)	Age 4	K	1st Grade	3rd Grade
Language, Literacy, and Pre-Writing					
Color Identification			NA	NA	NA
Pre-Writing (McCarthy Draw a Design)	0.14		NA	NA	NA
Emergent Literacy Scale (parent report)	0.35	0.16	NA	NA	NA
Letter Naming	0.24			NA	NA
Test of Phonological Processing (CTOPPP Elision)	0.10	0.15		NA	NA
Receptive Vocabulary (PPVT)	0.18				
Letter-Word Identification (WJIII)	0.26				
Spelling (WJIII)					NA
Oral Comprehension (WJIII)				0.08	NA
Pre-Academic Skills (WJIII)	0.22				NA

Source: Puma, Bell, Cook, Heid, Broene, Jenkins, Mashburn, and Downer (2012)

Some positive social-emotional scores, but also some negative ones

Exhibit 3a. Summary of ITT Social-Emotional Impacts for 4-Year-Olds by Year

Measure	Age 4 (Head Start Year)	K	1st Grade	3rd Grade
Parent-Reported Measures				
Aggressive Behavior				-0.13
Hyperactive Behavior				
Withdrawn Behavior			-0.13	
Total Problem Behavior				-0.12
Shy/Socially Reticent (ASPI)	NA		0.19	NA
Problems with Structured Learning (ASPI)	NA			NA
Problems with Teacher Interaction (ASPI)	NA		0.13	NA
Closeness with Teacher	NA			-0.13
Conflict with Teacher	NA			
Positive Teacher-Child Relationships	NA			-0.14
Conduct Problems-% in Normal Category	NA	NA	NA	
Emotional Symptoms-% in Normal Category	NA	NA	NA	-0.24

Source: Puma, Bell, Cook, Heid, Broene, Jenkins, Mashburn, and Downer (2012)

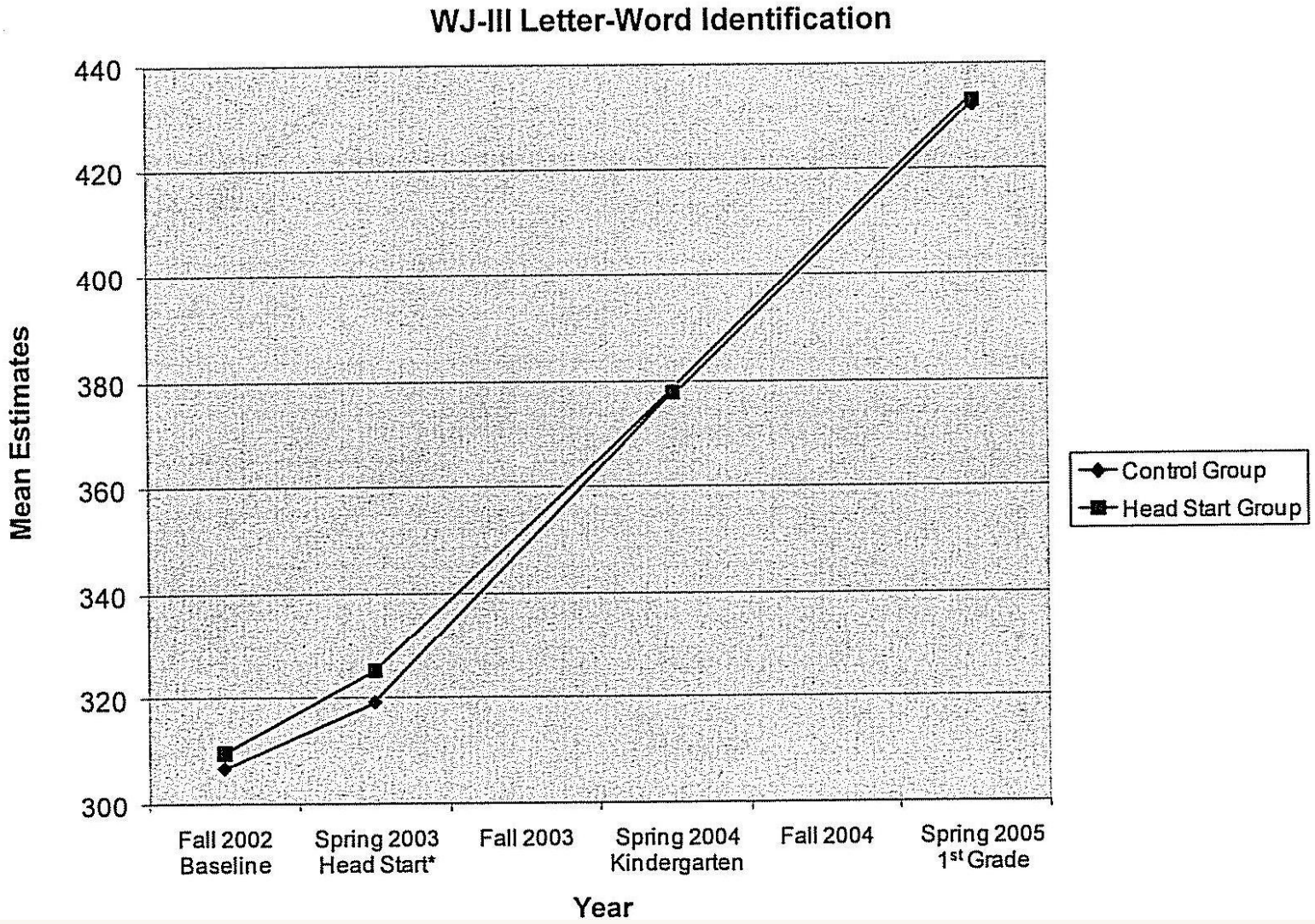
Better social-emotional scores for 3-year-olds, but small effects

Exhibit 3b. Summary of ITT Social-Emotional Impacts for 3-Year-Olds by Year

Measure	Age 3 (Head Start Year)	Age 4	K	1st Grade	3rd Grade
Parent-Reported Measures					
Aggressive Behavior					
Hyperactive Behavior	-0.21		-0.12		
Withdrawn Behavior					
Total Problem Behavior	-0.14				
Social Competencies					NA
Social Skills and Positive Approaches To Learning		0.11	0.14		0.12
Closeness with Parent				0.10	NA
Conflict with Parent					NA
Positive Parent-Child Relationships				0.10	NA

Source: Puma, Bell, Cook, Heid, Broene, Jenkins, Mashburn, and Downer (2012)

Head Start children continue to improve, but control children catch up



Source: Presentation by Steve Barnett, Rutgers University

Study of siblings in the National Longitudinal Survey of Youth show fade out of test scores, but other short-run and long-run effects

	Test scores				Nontest score	Long term
	5–6	7–10	11–14	5–14	7–14	19+
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Overall						
Head Start	0.145*	0.133**	0.055	0.101	0.265***	0.228***
	(0.085)	(0.060)	(0.062)	(0.057)	(0.082)	(0.072)

Test scores: Standardized PPVT and PIAT math and reading scores

Nontest score: Grade retention and learning disability diagnosis

Long term: High school graduation, college attendance, idleness, crime, teen parenthood, and health status.

Source: Demming (2009)

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