

- Parents of children in the Head Start group reported that their children had greater emerging literacy skills at the end of Head Start than did parents of children in the control group.
- There were no impacts for 4-year-olds in the cognitive domain at the end of kindergarten.
- At the end of 1st grade, there was suggestive evidence of a positive impact of access to Head Start on PPVT (vocabulary) scores.
- At the end of 3rd grade, there was suggestive evidence of a positive impact of access to Head Start on the ECLS-K Reading Assessment.
- No significant impacts were found for math skills, pre-writing, children's promotion, or teacher report of children's school accomplishments or abilities in any year.

3-Year-Old Cohort

- At the end of their Head Start year, there was strong evidence of better skills for the Head Start group on the following five outcomes related to children's language and literacy development: (1) PPVT (vocabulary), (2) WJIII Letter-Word, (3) Preschool Comprehensive Test of Phonological and Print Processing (CTOPPP) Elision, (4) Letter Naming, and (5) WJIII Pre-Academic Skills. There was also a statistically significant impact on the measure of children's pre-writing skills. Children in the Head Start group were found to have more advanced math skills than their counterparts at the end of the Head Start year on the WJIII test of Applied Problems.
- Favorable impacts of Head Start were also found on parental reports of children's emergent literacy skills at the end of the Head Start year.
- At the end of the age 4 year, few statistically significant impacts were found. However, two impacts persisted related to children's literacy skills. Children in the Head Start group scored higher than children in the control group on CTOPPP Elision as well as on parents' reports of their literacy skills.
- As with the 4-year-old cohort, there was no strong evidence of impacts on children's language, literacy, or math measures at the end of kindergarten or at the end of 1st grade. However, there was suggestive evidence of an impact on Oral Comprehension at the end of 1st grade.
- At the end of 3rd grade, there was suggestive evidence of an unfavorable impact—the parents of the Head Start group children reported a significantly lower child grade promotion rate than the parents of the non-Head Start group children.
- No statistically significant impacts were found for teacher reports of children's school performance, with the exception of a lower teacher assessment in kindergarten of Head Start children's math ability. This was not supported by children's scores on the three direct math assessments, which showed no evidence of math differences. However, the schools attended by the control group children in the 3-year-old cohort during their kindergarten year reported a significantly higher percentage of students at or above the proficient level in math than the schools attended by the Head Start group children.

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

Measure	Age 4 (Head Start Year)	K	1 Grade	3 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
Phonetic Skills/ Word Attack (WJIII)	NA			NA
Basic Reading (WJIII)	NA			NA
Academic Applications (WJIII)	NA	NA		NA
Academic Skills (WJIII)	NA	NA		NA
Passage Comprehension (WJIII)	NA	NA		NA
ECLS-K Reading	NA	NA		0.11
Writing Sample (WJIII)	NA	NA		NA
Spanish Language				
Receptive Vocabulary (TVIP)				NA
Batería WM Identificación de letras y palabras				
Math				
One-to-One Counting (Counting Bears)		NA	NA	NA
Applied Problems (WJIII)				
Quantitative Concepts (WJIII)	NA			NA
Math Reasoning (WJIII)	NA			NA
Calculation (WJIII)	NA	NA		
School Performance				
School Accomplishments	NA			NA
Promotion (parent report)	NA			
Language and Literacy Ability	NA			
Math Ability	NA			
Math Skills	NA	NA	NA	
Reading/Language Arts Skills	NA	NA	NA	
Social Studies and Science Ability	NA			NA

KEY:

-  Dark gray cell indicates a significant favorable impact ($p \leq 0.10$).
-  Diagonal mark cell indicates a significant unfavorable impact ($p \leq 0.10$).
-  Blank cell indicates no significant impact.

An * indicates that the interpretation of the outcome is unclear.

NA indicates that no data were collected for this outcome at this data collection point.

NOTE: Intent to Treat (ITT) effect sizes are presented only for statistically significant differences ($p \leq 0.10$). The effect size is simply the impact estimate divided by the standard deviation of the outcome measure in the population. The effect size provides an indication of the magnitude of each impact that is independent of the particular instrument or measure used. More discussion of the interpretation of effect sizes is provided in Chapter 2.

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

Measure	Age 3 (Head Start Year)	Age 4	K	1 Grade	3 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
Phonetic Skills/Word Attack (WJIII)	NA	NA			NA
Basic Reading (WJIII)	NA	NA			NA
Academic Applications (WJIII)	NA	NA	NA		NA
Academic Skills (WJIII)	NA	NA	NA		NA
Passage Comprehension (WJIII)	NA	NA	NA		NA
ECLS-K Reading	NA	NA	NA		
Writing Sample (WJIII)	NA	NA	NA		NA
Spanish Language					
Receptive Vocabulary (TVIP)					NA
Batería WM Identificación de letras y palabras			0.26		
Math					
One-to-One Counting/Counting Bears			NA	NA	NA
Applied Problems (WJIII)	0.15				
Quantitative Concepts (WJIII)	NA	NA			NA
Math Reasoning (WJIII)	NA	NA			NA
Calculation (WJIII)	NA	NA	NA		
School Performance					
School Accomplishments	NA	NA			NA
Promotion (parent report)	NA	NA			-0.11
Language and Literacy Ability	NA	NA			
Math Ability	NA	NA	-0.19		
Math Skills	NA	NA	NA	NA	
Reading/Language Arts Skills	NA	NA	NA	NA	
Social Studies and Science Ability	NA	NA			NA

KEY:

-  Dark gray cell indicates a significant favorable impact ($p \leq 0.10$).
-  Diagonal mark cell indicates a significant unfavorable impact ($p \leq 0.10$).
-  Blank cell indicates no significant impact.

An * indicates that the interpretation of the outcome is unclear.

NA indicates that no data were collected for this outcome at this data collection point.

NOTE: Intent to Treat (ITT) effect sizes are presented only for statistically significant differences ($p \leq 0.10$). The effect size is simply the impact estimate divided by the standard deviation of the outcome measure in the population. The effect size provides an indication of the magnitude of each impact that is independent of the particular instrument or measure used. More discussion of the interpretation of effect sizes is provided in Chapter 2.

Impacts on Children's Social-Emotional Development

The social-emotional domain consisted of parent-reported measures during the Head Start years, reports by both parents and teachers in all elementary school years, with child self-reports added at the end of 3rd grade. Measures of children's behavior, social skills and approaches to learning, parent-child relationships, teacher child relationships, school adjustment, peer relationships and school experiences were assessed.

With regard to children's social-emotional development, the results differed by age cohort and by the source of the information on the child's behavior. For children in the 4-year-old cohort, there were no observed impacts through the end of kindergarten and then favorable impacts reported by parents and unfavorable impacts reported by teachers at the end of 1st and 3rd grades and children at the end of 3rd grade.

In contrast, the early favorable social emotional impacts reported by parents for the 3-year-old cohort continued into early elementary school. There were favorable impacts at all data collection points through the end of 3rd grade on parent-reported measures of children's social-emotional development. However, there were no impacts on teacher-reported measures of social-emotional development for the 3-year-old cohort at any data collection point or on the children's self-reports in 3rd grade.

The findings from the social-emotional domain are summarized by age cohort below. Exhibits 3a and 3b provide all statistically significant social-emotional impacts and their effect sizes from the ITT analysis.

4-Year-Old Cohort

- There were no significant differences between the Head Start group and the control group on any measures of social-emotional development during the Head Start year or during kindergarten.
- At the end of 1st grade, impacts on social-emotional development were few and mixed.
 - There were two unfavorable findings based on teacher reports of children's behavior: (1) children in the Head Start group demonstrated moderate evidence of more socially reticent behavior (i.e., shy and hesitant behavior) as reported by teachers, and (2) there was suggestive evidence of more problematic student-teacher interactions.
 - In contrast, there was suggestive evidence of less withdrawn behavior for children in the Head Start group as reported by their parents.
- At the end of 3rd grade, parents reported less aggressive and total problem behaviors for the Head Start group children. However, teachers reported unfavorable impacts with a higher incidence of children's emotional symptoms, less closeness, and a less positive relationship with the Head Start children. Finally, Head Start children in the 4-year-old cohort reported less positive peer relations at school compared to the control group.