

**Chicago Longitudinal Study:
Cognitive Advantage Mediators**

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CLS Cognitive Advantage Overview: The following report reviews the cognitive advantage mediators in the Chicago Longitudinal Study (CLS). Data sources include students' standardized test scores from the Reading and Math scales of the Iowa Test of Basic Skills (ITBS) for grades 1, 3, 6, and 8; teacher reports of student end-of-the-year grades in reading and math for grades 1-6; student performance on the Chicago Minimum Proficiency Skills Test (MPST) in 1994; attendance records (up to sixth grade); and retention records.

Indicators: Table 1 reports descriptive statistics and reveals the following: Children who attended CPC (Child Parent Center) programs had significantly higher ITBS scores than those who did not. Similarly, the ITBS scores of children who attended the CPC school-age program were significantly higher than the scores of children who did not attend the school-age program. In addition, females scored significantly higher than males on the Iowa Test of Basic Skills.

In regards to student end-of-year grades in math and reading (grades 1-6) as reported by teachers, children who attended CPC programs and school-age programs received significantly higher grades than those who did not. Also, females' end-of-year grades were significantly higher than males'.

Children who attended a CPC program, as well as students who attended a school-age program scored significantly higher on the MPST than the control group. Additionally, the CPC and school-age groups had significantly higher rates of passing the MPST in 1994. Again, females performed significantly better than did males.

The CPC group was absent from school (during grades 1-6) at a significantly lower rate than the control group. Females were absent at a significantly lower rate than males. There were no significant differences between the school-age group and the control group.

Compared to the control group, retention rates (grades 1-8) were significantly lower for the CPC and school age group. The same is also true for early retention rates (grades 1-3). There were no differences in later retention rates (grades 4-8) between experimental and control groups. Retention rates for females were significantly lower than for males in all measures of retention.

Correlates: Table 2 reports correlations between select explanatory variables and eight cognitive advantage mediators. Five of the explanatory measures: family risk index, maternal high school completion, maternal employment, free lunch status, and poverty in school attendance area, correlate significantly with all eight of the outcomes: Year 1 ITBS reading and math scores, Year 8 ITBS reading and math Scores, final math and reading grades, days absent, and retention. Single parent status is significantly associated with three of the outcomes: year 8 ITBS reading and math scores and days absent. Finally, maternal age at child's birth (<18 years) is significantly associated with three outcomes including year 1 and 8 reading scores and days absent.

Subgroup Comparisons: Table 3 shows the mean 8th grade reading ITBS scores in the CLS sample as they vary by important background characteristics. Patterns are consistent within the dichotomized risk and protective factors, with the disadvantaged group scoring lower on the reading test. The largest differences are seen across the following variables: gender, maternal high school completion and employment, free lunch status, public aid, risk level, socialemotional adjustment, reading scores, retention, and child welfare case history.

Comparisons to National Norms: Figures 1, 2, 3, and 4 compare national average scores on the ITBS to CLS average scores, revealing that children in the CPC group consistently scored lower than the national averages and higher than the control group in both reading and math for years 1, 3, 6, and 8.

Table 1 Cognitive Advantage Mediators in the Chicago Longitudinal Study

	N	Total Sample	Boys	Girls	CPC Preschool		School-age program		CPC Extended Intervention		
		Mean			Any	None	Any	None	4-6 years	1-3 years	None
ITBS Word Analysis (kindergarten)	1531	63.8	62.6**	64.9	65.9**	59.9	61.5**	57.4	67.4	63.1	59.5
ITBS Readiness (kindergarten)	1102	47.7	47.0*	48.4	49.3**	44.1	48.6**	46.3	50.6	46.2	44.8
ITBS Math (kindergarten)	1531	56.7	55.6**	57.8	58.7**	52.9	58.4**	54.5	60.5	55.5	53.0
ITBS Reading (year 1)	1350	73.6	71.5**	75.7	75.6**	69.7	75.8**	70.4	77.7	71.8	69.4
ITBS Math (year 1)	1358	73.1	71.6**	74.5	74.8**	69.8	75.4**	69.6	77.2	71.2	69.1
ITBS Reading (year 3)	1288	97.1	94.2**	99.7	98.7**	94.0	100.0**	92.8	101.5	95.1	92.4
ITBS Math (year 3)	1289	100.7	99.2**	102.1	102.1**	98.0	102.8**	97.6	104.2	99.0	97.2
ITBS Reading (year 6)	1209	123.9	120.3**	127.2	125.4**	120.8	125.9**	121.0	127.7	121.5	120.8
ITBS Math (year 6)	1204	128.8	126.2**	131.3	130.4**	125.6	130.7**	126.0	132.7	126.5	125.5
ITBS Reading (year 8)	1344	144.7	140.5**	148.8	147.1**	140.3	146.7**	141.9	149.4	142.3	140.8
ITBS Math (year 8)	1343	147.3	144.4**	150.1	149.2**	143.7	149.2**	144.6	151.5	145.0	144.0
ITBS Reading at Grade 8	1172	147.3	144.2**	150.3	149.6**	142.8	149.2**	144.7	151.6	145.2	143.5
ITBS Math at Grade 8	1172	150.2	148.1**	152.2	151.9**	146.9	151.7**	148.1	153.6	148.3	147.5
Final Grade Reading Grades 1-3 (1+scores)	1421	3.2	3.0**	3.4	3.3**	3.0	3.3**	3.1	3.5	3.1	3.0
Final Grade Math Grades 1-3 (1+scores)	1295	3.2	3.1**	3.3	3.3**	3.1	3.3**	3.1	3.4	3.1	3.1
Final Grade Reading Grades 4-6 (1+scores)	1203	2.0	1.8**	2.3	2.1**	1.9	2.1**	1.9	2.1	2.0	1.9
Final Grade Math Grades 4-6 (1+scores)	1201	2.0	1.8**	2.2	2.1**	1.9	2.1**	1.9	2.2	1.9	1.9
Final Grade Reading Grades 1-6 (2+ scores)	1338	2.7	2.5**	3.0	2.8**	2.5	2.8**	2.6	3.0	2.6	2.5
Final Grade Math Grades 1-6 (2+ scores)	1392	2.6	2.4**	2.7	2.6**	2.4	2.7**	2.4	2.8	2.5	2.4
MPST (Life Skills) Total Score 1994	1345	40.0	38.9**	41.0	41.2**	37.7	41.2**	38.1	42.4	39.0	37.4
MPST (Life Skills) Pass/Fail 1994	1345	0.6	0.6**	0.7	0.7**	0.5	0.7**	0.5	0.7	0.6	0.5

	Total Sample		Boys	Girls	CPC Preschool		School-age program		CPC Extended Intervention		
	N	Mean			Any	None	Any	None	4-6 years	1-3 years	None
Days of Absence (range 1-17)	1190	7.3	7.8**	6.8	7.1*	7.7	7.1	7.5	6.9	7.5	7.6
Retention	1377	0.3	0.4**	0.2	0.2**	0.4	0.2**	0.4	0.2	0.3	0.4
Early Retention	1377	0.2	0.3**	0.2	0.2**	0.3	0.1**	0.3	0.1	0.2	0.3
Later Retention	1377	0.1	0.06**	0.1	0.1	0.1	.1	0.1	0.1	0.1	0.1

*p<.05
** p<.01

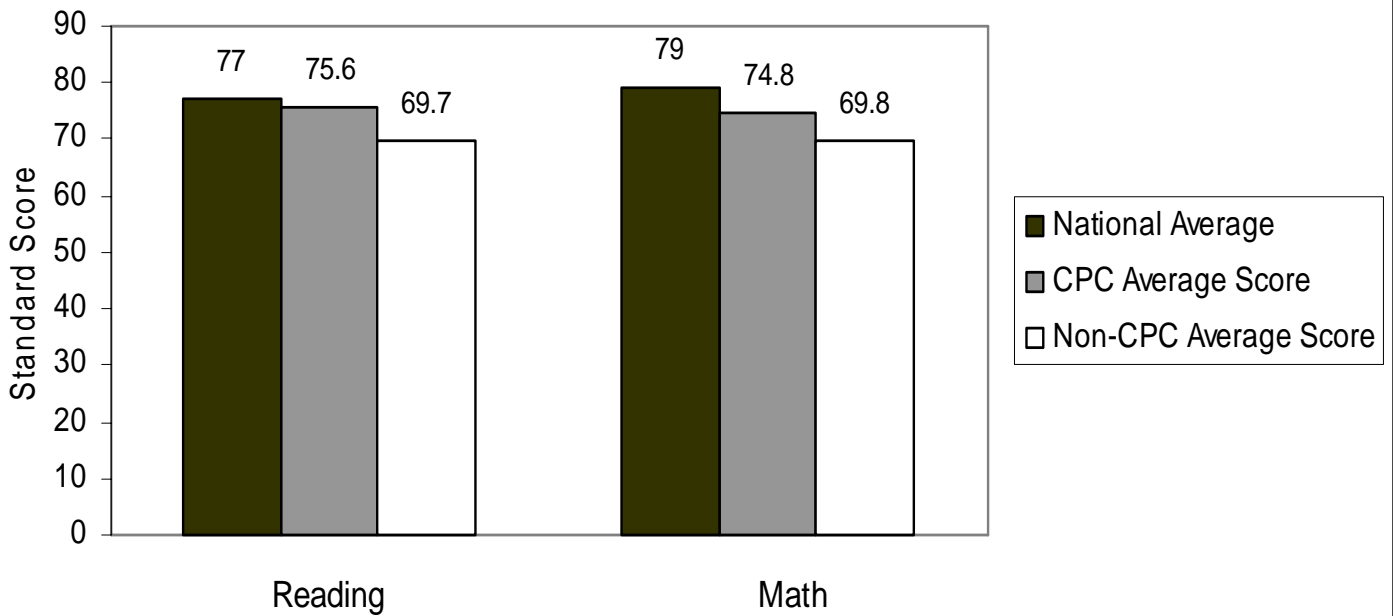
Table 2 Correlation Matrix for select mediators of Cognitive Advantage

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Family risk index																	
2. Single parent status	.45**																
3. Mother is less than 18	.40**	.23**															
4. Mother did not completed HS	.55**	.12**	.34**														
5. Mother not employed	.69**	.18**	.07*	.18**													
6. 4 or more children in household	.12**	-.22**	-.20**	.06*	.00												
7. TANF/AFDC participation	.72**	.25**	.11**	.20**	.67**	-.05											
8. Eligible for free lunch	.54**	.12**	.06*	.16**	.33**	.02	.40**										
9. 60% or greater poverty in school attendance area	.32**	.07*	-.02	.04	.09**	.04	.08**	.06*									
10. ITBS Reading Year 1	-.20**	-.04	-.10**	-.11**	-.19**	-.03	-.13**	-.11**	-.03								
11. ITBS Math Year 1	-.18**	-.05	-.05	-.10**	-.18**	-.02	-.11**	-.11**	-.04	.67**							
12. ITBS Reading Year 8	-.23**	-.08**	-.06*	-.15**	-.18**	-.06*	-.14**	-.18**	-.03	.57**	.53**						
13. ITBS Math Year 8	-.25**	-.11**	-.04	-.19**	-.18**	-.02	-.19**	-.18**	-.04	.61**	.63**	.78**					
14. Final Grade in Reading (Grades 1-6)	-.17**	-.03	-.03	-.10**	-.15**	-.02	-.11**	-.11**	-.05	.65**	.57**	.65**	.68**				
15. Final Grade in Math (Grades 1-6)	-.15**	-.05	-.01	-.10**	-.11**	-.01	-.12**	-.12**	-.04	.47**	.46**	.54**	.61**	.83**			
16. Days of Absence	.17**	.09**	.06*	.11**	.14**	.00	.14**	.10**	.02	-.12**	-.12**	-.19**	-.22**	-.23**	-.24**		
17. Retention	.13**	.05	.05	.09**	.13**	-.01	.08**	.09**	.00	-.43**	-.43**	-.48**	-.53**	-.48**	-.35**	.09**	

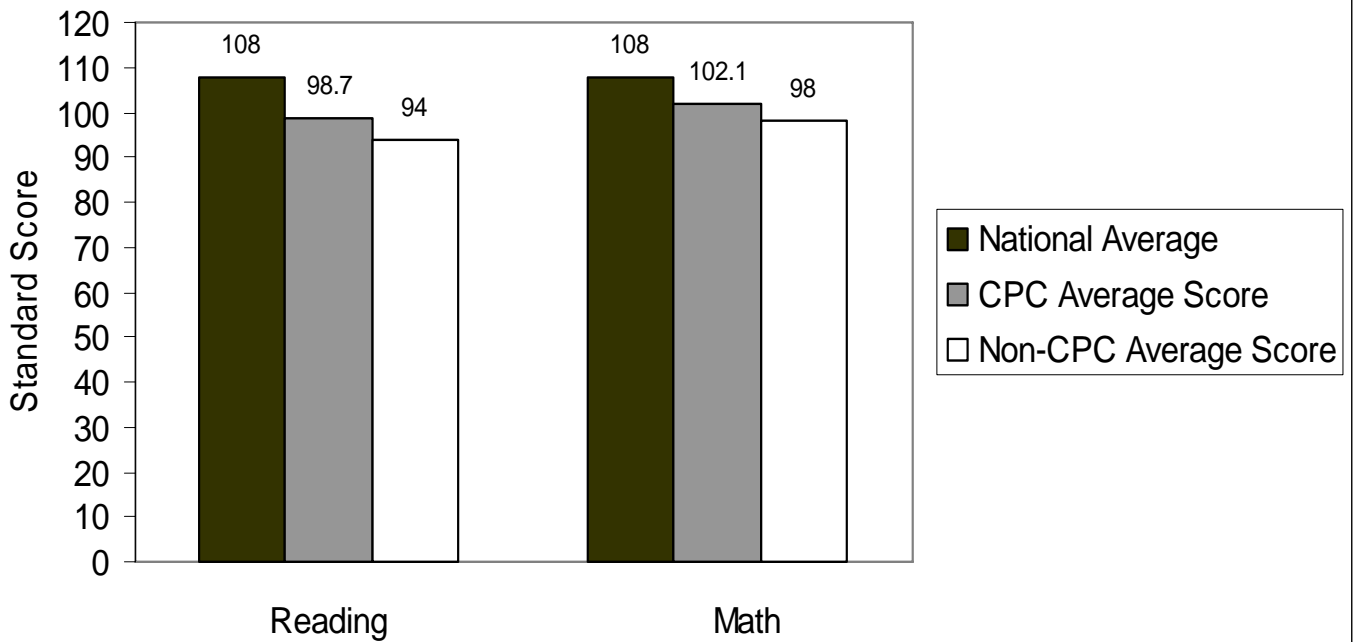
Table 3. Proportions of CLS Sample with ITBS Reading Grade 8

Factor Age 0-3	Total Sample N=1344	Mean	Gender		CPC Preschool		School Age		CPC Extended Intervention		
			Males	Females	Any	None	Any	None	4 to 6	1 to 4	0
Black	1253	50.0	42.8	57.0	54.1	42.3	53.7	44.9	58.8	45.3	42.8
Other	91	57.1	45.8	69.8	60.0	51.6	64.0	48.8	69.4	42.9	55.6
Male	662	43.1			47.8	35.0	46.3	38.5	53.8	37.5	35.2
Female	682	57.8			60.6	51.8	62.1	51.6	64.6	53.0	52.9
Single-Parent Family	1007	49.2	41.7	56.4	53.5	40.6	53.4	43.2	59.4	43.0	41.9
Other Family Structure	300	55.0	49.3	60.4	56.3	52.8	57.5	51.3	58.2	54.3	50.7
Mother Not H.S. Graduate	714	43.4	35.5	51.6	48.3	35.4	49.0	36.3	53.4	40.0	34.9
Mother H.S. Graduate	589	58.2	51.9	64.1	60.0	54.2	59.5	56.3	64.2	51.7	56.7
Mother Not Employed FT/PT	816	46.6	38.8	53.5	52.1	35.3	50.3	41.2	55.6	42.5	37.4
Mother Employed FT/PT	440	58.4	50.9	66.4	60.7	54.4	63.3	51.4	68.2	50.7	52.9
Mother Teen Parent < 18	221	44.8	35.6	55.3	51.1	33.8	51.6	35.5	56.4	43.5	29.4
Mother Not Teen Parent < 18	1097	51.5	44.9	57.7	54.8	45.0	54.7	46.9	59.5	46.0	46.3
Four or More Children	226	44.7	36.2	52.1	46.8	41.2	45.7	43.4	50.6	40.0	42.4
Less Than Four Children	1081	51.7	44.9	58.5	55.6	44.1	56.1	45.4	60.8	46.5	44.4
Free/Reduced Lunch	1146	47.5	39.3	55.1	51.5	39.8	51.6	41.8	56.4	43.0	39.9
No Free/Reduced Lunch	198	68.2	61.8	76.1	71.8	61.2	69.4	66.2	75.6	60.3	65.3
60% K School Poverty	1021	49.2	41.6	56.1	53.7	40.1	54.8	41.3	59.5	44.6	38.6
< 60% K School Poverty	323	54.8	47.1	63.6	57.6	50.4	52.8	57.7	59.8	47.0	58.3
AFDC Receipt	861	45.9	38.6	52.7	50.3	37.5	49.5	40.6	55.1	40.5	39.1
No AFDC Receipt	482	58.9	50.6	67.5	62.2	52.7	63.1	53.2	67.4	54.5	51.6
Four or More Risks	997	45.8	37.8	53.3	50.2	37.5	49.3	41.0	55.1	41.0	38.5
Less Than Four Risks	347	64.0	56.9	71.7	67.0	58.3	68.4	57.4	71.2	60.0	57.1
SEMAT16D < avg.	706	29.3	28.4	30.7	32.9	23.6	32.9	24.9	37.0	26.4	24.0
SEMAT16D > avg.	633	74.1	70.1	76.4	75.3	71.3	75.2	72.2	77.6	70.9	71.4
ITBS6 Read < 88 norms	589	22.4	19.6	26.1	24.8	18.6	24.5	20.0	27.4	20.3	19.2
ITBS6 Read ≥ 88 norms	617	80.2	79.0	81.1	81.2	77.8	80.7	79.5	82.2	77.6	79.8
School mobility (age 4-8), ≥ 3	125	31.2	23.3	59.0	39.3	24.6	32.7	30.0	40.9	31.4	26.9
School mobility (age 4-8), < 3	1217	52.5	45.6	42.3	55.6	46.1	55.9	47.3	60.4	46.7	47.2
Retained ≥ 1 grade	381	17.3	13.7	24.1	21.3	12.1	18.9	15.9	21.8	18.4	12.3
Not retained	963	63.7	60.6	65.9	65.4	59.9	64.8	61.7	68.5	57.6	63.6
Child welfare case history	51	43.1	25.0	59.3	41.4	45.5	45.2	40.0	46.7	45.5	35.7
No child welfare case history	1286	50.9	43.8	57.8	55.1	42.8	54.8	45.4	59.9	45.3	44.3

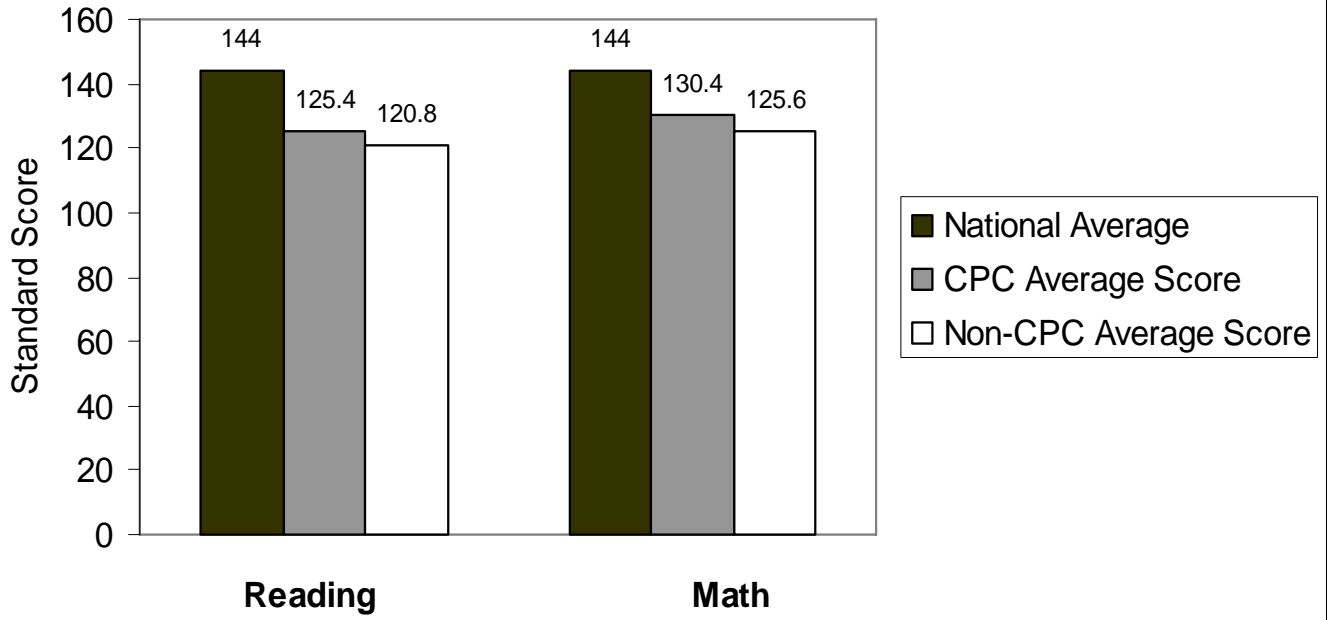
Year 1 ITBS Scores



Year 3 ITBS Scores



Year 6 ITBS Scores



Year 8 ITBS Scores

