
***Analysis of the ECLS-K
for Evidence on Learning Productivity
from Pre-K Enrollments***

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Summary

Table 1 shows pre-K enrollment is strongly positively associated with reading and math achievement scores.

Table 2 shows teachers are more likely to report ‘student behavior does not interfere with my teaching’ if more of the class has attended pre-K.

Table 3 shows principals report lower student absenteeism and fewer problems with maintenance of order and discipline if more of the class has attended pre-K.

Table 4 shows that where student behavior does not interfere with teaching, teachers are more satisfied with their job.

Table 5 shows that there are fewer problems with teacher absenteeism and teacher turnover if more of the school has attended pre-K.

Table 6 shows the negative correlation between student achievement and weapons brought into school, thefts reported in school, and physical attacks in school.

Table 7 shows the negative correlation between school pre-K enrollments and fighting observed in school, school judged not very safe, and thefts reported in school.

Table 1
Impact of Center-based Pre-K Provision on Student Test Scores

	<i>Standardized Reading Score in Kindergarten</i>		<i>Standardized Math Score in Kindergarten</i>	
	(1)	(2)	(1)	(2)
<u>Pre-K relative to parental care:</u>				
Center-based	0.1702 (0.0233)**	0.1536 (0.0235)**	0.1837 (0.0217)**	0.1578 (0.0219)**
Care by relatives	0.0144 (0.0287)	0.0122 (0.0286)	0.0638 (0.0266)*	0.0608 (0.0265)*
Care by non-relatives	0.0421 (0.0323)	0.0354 (0.0323)	0.1057 (0.0304)**	0.0964 (0.0303)**
Head Start	-0.0083 (0.0317)	-0.0024 (0.0317)	0.0385 (0.0291)	0.0455 (0.0290)
Other provision	0.0472 (0.0315)	0.0471 (0.0314)	0.0713 (0.0291)*	0.0708 (0.0291)*
Center-based Pre-K: % in class		0.3898 (0.0713)**		0.4570 (0.0593)**
Male	-0.1825 (0.0154)**	-0.1824 (0.0154)**	-0.0396 (0.0145)**	-0.0398 (0.0144)**
English not first language	-0.1532 (0.0342)**	-0.1457 (0.0342)**	-0.2321 (0.0287)**	-0.2189 (0.0286)**
Socio-economic status	0.2271 (0.0187)**	0.2186 (0.0187)**	0.2202 (0.0178)**	0.2069 (0.0178)**
Socio-economic status sqd.	0.0373 (0.0066)**	0.0358 (0.0066)**	0.0327 (0.0061)**	0.0304 (0.0061)**
Disability	-0.2753 (0.0222)**	-0.2748 (0.0222)**	-0.3143 (0.0212)**	-0.3135 (0.0212)**
Number of siblings	-0.0913 (0.0070)**	-0.0907 (0.0070)**	-0.0536 (0.0066)**	-0.0528 (0.0066)**
Age (months)	0.1949 (0.0430)**	0.1911 (0.0430)**	0.4217 (0.0400)**	0.4165 (0.0399)**
Age (months) sqd.	-0.0010 (0.0003)**	-0.0010 (0.0003)**	-0.0024 (0.0003)**	-0.0024 (0.0003)**
Student observations	<i>11,739</i>		<i>12,548</i>	

Notes: Random effects Maximum Likelihood Estimation; group variable is school ($n=711$). Robust standard errors in parentheses. Estimation also includes: constant term; region (4); city/urban (2); child ethnicity (4); father/mother works (2); welfare receipt (3); mother's age; and mother's education (4). Public school children only. **, * significant at 1%, 5%.

Source: ECLS-K, school-level data from child-level questionnaire (base year, 1998).

Table 2
Impact of Academic Ability and Center-based Pre-K Provision on Student Behavior

	<i>Student Behavior Does Not Interfere With My Teaching</i>
At/above grade level in Math: % in class	0.5339 (0.2612)*
Center-based pre-K: % of class	0.8650 (0.2408)**
Region: North East	0.2585 (0.1328)
Region: Mid West	0.0318 (0.1207)
Region: South	-0.0867 (0.1157)
Site: Urban	0.1893 (0.1182)
Site: Town	0.2006 (0.1223)
Teacher has doctorate	0.1937 (0.1326)
Male teacher	-0.2193 (0.2738)
Tenure (years)	-0.0012 (0.0047)
Teacher observations	2,079

Notes: Population-Averaged Probit Estimation; group variable is school ($n=637$). Robust standard errors in parentheses. Teacher-level weights. Public school teachers only. Constant term included. **, * significant at 1%, 5%.
Source: ECLS-K, data from teacher questionnaire (base year, 1998).

Table 3
Impact of Academic Achievement and Center-based Pre-K
on Student Absenteeism and Maintenance of Order and Discipline

	<i>School Problems:</i>			
	<i>Student Absenteeism</i>	<i>Maintenance of Order and Discipline</i>	<i>Student Absenteeism</i>	<i>Maintenance of Order and Discipline</i>
Center-based Pre-K: % in school			-1.1853	-1.0096
Reading at grade level ^a	-0.3042 (0.0900)**	-0.2618 (0.0984)**	(0.4296)**	(0.4106)*
Region: North East	0.0741 (0.2830)	0.2281 (0.2635)	-0.3316 (0.2582)	0.0787 (0.2252)
Region: Mid West	0.4142 (0.2379)	-0.0357 (0.2206)	-0.0616 (0.2147)	0.1371 (0.1922)
Region: South	0.3000 (0.2490)	0.1938 (0.2228)	0.0047 (0.2238)	-0.0142 (0.1996)
Site: Urban	-0.0184 (0.2109)	-0.3693 (0.2078)	-0.1539 (0.2003)	-0.3008 (0.1840)
Site: Town	0.1108 (0.2075)	-0.4301 (0.2118)*	-0.0550 (0.1955)	-0.2821 (0.1847)
% Free-lunch students	0.0030 (0.0030)	0.0051 (0.0033)	0.0073 (0.0025)**	0.0014 (0.0025)
Enrollment Hispanic > 5%	0.0925 (0.1653)	-0.2210 (0.1643)	0.0190 (0.1512)	0.0564 (0.1465)
Enrollment Black > 5%	-0.0188 (0.1798)	-0.0788 (0.1731)	-0.0919 (0.1657)	-0.0495 (0.1565)
Size: 150-299 students	-0.1537 (0.4304)	0.2761 (0.4444)	0.2957 (0.3913)	-0.1943 (0.3628)
Size: 300-499 students	-0.1098 (0.4076)	0.0194 (0.4144)	0.3191 (0.3676)	-0.3667 (0.3344)
Size: 500-749 students	-0.0023 (0.4135)	0.0691 (0.4295)	0.4841 (0.3708)	-0.1158 (0.3350)
Size: 750+ students	0.2145 (0.4306)	0.3310 (0.4310)	0.8130 (0.3861)*	-0.1171 (0.3531)
School observations		<i>410</i>		<i>536</i>

Notes: Probit Estimation. Robust standard errors in parentheses. School-level weights. Public schools only. Constant term included. **, * significant at 1%, 5%.

Source: ECLS-K, school-level data from school administrator questionnaire (base year, 1998).

Table 4
Impact of Student Behavior on Teacher Satisfaction

	<i>Teacher Really Enjoys Present Teaching Job</i>	<i>Teacher Would Choose Teaching Career Again</i>
Student behavior <u>does not</u> interfere with my teaching	0.6864 (0.0782)**	0.5123 (0.0789)**
Region: North East	0.1011 (0.1183)	0.1941 (0.1251)
Region: Mid West	-0.0307 (0.1137)	0.0279 (0.1148)
Region: South	-0.1229 (0.0870)	-0.2948 (0.0908)**
Site: Urban	-0.1879 (0.0927)*	-0.1459 (0.0976)
Site: Town	-0.1387 (0.1008)	-0.0484 (0.1034)
Teacher has doctorate	-0.2942 (0.1257)*	-0.0555 (0.1409)
Male teacher	-0.3306 (0.2407)	-0.1166 (0.2654)
Tenure (years)	0.0070 (0.0043)	-0.0052 (0.0046)
Teacher observations	2,079	

Notes: Population-Averaged Probit Estimation; group variable is school ($n=637$). Robust standard errors in parentheses. Teacher-level weights. Public school teachers only. Constant term included. **, * significant at 1%, 5%.

Source: ECLS-K, data from teacher questionnaire (base year, 1998).

Table 5
Impact of Academic Achievement and Center-based pre-K on Teacher Absenteeism and Teacher Turnover

	<i>School Problems:</i>			
	<i>Teacher Absenteeism</i>	<i>Teacher Turnover</i>	<i>Teacher Absenteeism</i>	<i>Teacher Turnover</i>
Center-based Pre-K: % in school			-1.6621 (0.4294)**	-0.6369 (0.5269)
Reading at grade level ^a	-0.1596 (0.0825)	-0.1933 (0.1069)		
Region: North East	0.3974 (0.2919)	0.0516 (0.3319)	-0.0451 (0.2460)	-0.2317 (0.3165)
Region: Mid West	0.4625 (0.2558)	-0.0102 (0.3006)	0.2149 (0.2178)	-0.1446 (0.2627)
Region: South	0.3711 (0.2686)	0.0496 (0.2797)	0.4017 (0.2248)	-0.0202 (0.2726)
Site: Urban	-0.2753 (0.2054)	-0.4065 (0.2498)	-0.0379 (0.1923)	-0.2016 (0.2157)
Site: Town	-0.0994 (0.1972)	-0.2392 (0.2455)	-0.1570 (0.1869)	-0.0917 (0.2282)
% Free-lunch students	0.0049 (0.0029)	0.0006 (0.0032)	0.0011 (0.0025)	0.0023 (0.0030)
Enrollment Hispanic > 5%	-0.1171 (0.1759)	0.1878 (0.2099)	-0.2730 (0.1623)	0.2949 (0.1971)
Enrollment Black > 5%	0.1455 (0.1894)	-0.1142 (0.2230)	0.2231 (0.1732)	-0.2598 (0.2201)
Size: 150-299 students	0.2126 (0.4538)	0.3349 (0.5839)	0.2796 (0.4059)	-0.4954 (0.4196)
Size: 300-499 students	0.3256 (0.4250)	0.1845 (0.5456)	0.6508 (0.3672)	-0.6132 (0.3820)
Size: 500-749 students	0.5884 (0.4326)	0.3963 (0.5571)	0.8963 (0.3693)*	-0.2696 (0.3881)
Size: 750+ students	0.9054 (0.4416)*	0.5000 (0.5561)	1.0543 (0.3852)**	-0.2553 (0.3963)
School observations	410		536	

Notes: Probit Estimation. Robust standard errors in parentheses. School-level weights. ^a Percentage of students reading at or above grade-level, standardized $\sim(0,1)$. Public schools only. Constant term included. **, * significant at 1%, 5%.

Source: ECLS-K, school-level data from school administrator questionnaire (base year, 1998).

Table 6
Impact of Academic Achievement on School Safety

	<i>Fighting Observed</i>	<i>School Judged Not 'Very Safe'</i>	<i>Weapons Brought Into School</i>	<i>Thefts Reported In School</i>	<i>Physical Attacks</i>
Reading at grade level ^a	-0.0894	0.0135	-0.1978	-0.2665	-0.3064
	(0.1103)	(0.0892)	(0.0968)*	(0.1083)*	(0.0887)**
Region: North East	-0.7503	0.3574	0.4053	0.3505	0.0174
	(0.3380)*	(0.2650)	(0.3130)	(0.3461)	(0.2618)
Region: Mid West	-0.1273	0.3878	0.3962	0.5309	0.1899
	(0.2650)	(0.2321)	(0.2622)	(0.3100)	(0.2212)
Region: South	-0.3646	0.1638	-0.0912	-0.0476	-0.1036
	(0.2700)	(0.2340)	(0.2572)	(0.3037)	(0.2329)
Site: Urban	0.1872	-0.4102	-0.0609	-0.3543	-0.3113
	(0.2445)	(0.2008)*	(0.2359)	(0.2937)	(0.2062)
Site: Town	0.3921	-0.3134	0.1095	0.2645	-0.0668
	(0.2505)	(0.2046)	(0.2399)	(0.2745)	(0.2055)
% Free-lunch students	0.0050	0.0063	0.0029	0.0055	0.0010
	(0.0033)	(0.0031)*	(0.0031)	(0.0040)	(0.0029)
Enrollment Hispanic > 5%	-0.0143	0.3278	0.3086	-0.0280	-0.1408
	(0.1981)	(0.1703)	(0.1744)	(0.2171)	(0.1615)
Enrollment Black > 5%	-0.1592	-0.1434	0.0362	0.1652	0.1492
	(0.2139)	(0.1698)	(0.1939)	(0.2618)	(0.1773)
Size: 150-299 students	0.3615	-1.3159	5.8319	5.3161	0.4102
	(0.4800)	(0.5211)*	(0.2773)**	(0.0000)	(0.4392)
Size: 300-499 students	0.6692	-1.2267	6.2745	5.5766	0.8130
	(0.4737)	(0.5071)*	(0.2273)**	(0.3184)**	(0.4186)
Size: 500-749 students	0.4870	-1.5451	6.1877	5.5849	0.7818
	(0.4979)	(0.5138)**	(0.2162)**	(0.3058)**	(0.4307)
Size: 750+ students	0.7661	-1.5886	6.2661	6.4820	1.0594
	(0.5085)	(0.5241)**	(0.0000)	(0.3315)**	(0.4424)*
School observations			410		

Notes: Probit Estimation. Robust standard errors in parentheses. School-level weights. ^a Percentage of students reading at or above grade-level, standardized $\sim(0,1)$. Public schools only. Constant term included. **, * significant at 1%, 5%.

Source: ECLS-K, school-level data from school administrator questionnaire (base year, 1998).

Table 7
Impact of Center-based Pre-K on School Safety

	<i>Fighting Observed</i>	<i>School Judged Not 'Very Safe'</i>	<i>Weapons Brought Into School</i>	<i>Thefts Reported In School</i>	<i>Physical Attacks</i>
Center-based pre-K: % in school	-2.2093 (0.4938)**	-1.4147 (0.3946)**	-0.7169 (0.4707)	-1.2683 (0.5611)*	-0.4387 (0.3923)
Region: North East	-0.8289 (0.2963)**	0.5848 (0.2288)*	0.4135 (0.2919)	0.0993 (0.3191)	0.3099 (0.2239)
Region: Mid West	0.1131 (0.2294)	0.3288 (0.2014)	0.2227 (0.2531)	0.2127 (0.2382)	0.1868 (0.1846)
Region: South	-0.4232 (0.2356)	0.1917 (0.2099)	-0.0594 (0.2305)	-0.5672 (0.2807)*	-0.2921 (0.1979)
Site: Urban	0.1761 (0.2178)	-0.3937 (0.1894)*	0.0803 (0.2288)	-0.2663 (0.2896)	-0.3362 (0.1961)
Site: Town	0.0375 (0.2196)	-0.1811 (0.1877)	0.1436 (0.2287)	0.1055 (0.2335)	-0.1444 (0.1845)
% Free-lunch students	0.0021 (0.0027)	0.0048 (0.0025)	0.0028 (0.0027)	0.0013 (0.0038)	0.0021 (0.0024)
Enrollment Hispanic > 5%	-0.0318 (0.1746)	0.0614 (0.1530)	0.2119 (0.1810)	-0.2799 (0.1851)	-0.0886 (0.1422)
Enrollment Black > 5%	0.1539 (0.1836)	-0.1870 (0.1558)	-0.0400 (0.1718)	0.1401 (0.2236)	0.3236 (0.1537)*
Size: 150-299 students	0.6241 (0.4104)	-0.0089 (0.3507)	5.5986 (0.0000)	5.2602 (0.2816)**	0.5639 (0.3599)
Size: 300-499 students	0.9148 (0.3797)*	0.0431 (0.3367)	5.7073 (0.2417)**	5.5313 (0.2679)**	0.8654 (0.3418)*
Size: 500-749 students	0.8481 (0.3897)*	-0.1178 (0.3381)	5.6924 (0.2331)**	5.5928 (0.2236)**	0.8601 (0.3450)*
Size: 750+ students	0.9734 (0.4131)*	-0.2845 (0.3572)	6.0355 (0.2575)**	6.2447 (0.0000)	1.2050 (0.3585)**
School observations			536		

Notes: Probit Estimation. Robust standard errors in parentheses. School-level weights. Public schools only. Constant term included. **, * significant at 1%, 5%.

Source: ECLS-K, school-level data from school administrator questionnaire (base year, 1998).