

Online Appendix: Human Capital and Black-White Earnings Gaps, 1966-2017

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NLS-OC Test Score Validity

Table A1 reports the results of several exercises that probe the validity of the test score measures available in the NLS-OC sample.

First, in Columns 1 and 2 of Table A1 I use the subset of the NLSY-79 sample from the main paper that has both AFQT scores and a valid test score from the school survey conducted by the NLSY-79 administrators in a fashion similar to the school survey conducted in the NLS-OC, and simply regresses earnings onto the two test score measures separately. The coefficient on AFQT scores is .394, while the coefficient on the other test score measure in the same sample is .340. The similarity of these coefficients is reassuring in that it suggests that test scores measured using these two distinct methods are capturing a similar underlying set of earnings correlates.

The remainder of Table A1 investigate the impacts of the various specific tests used to construct the standardized test score measure in the NLS-OC. Columns 3 and 4 of Table A1 show the results of regressing earnings onto standardized test scores in the NLS-OC sample, first without controls for test type as in the main paper, and then with test type fixed effects included. The returns to test scores are virtually unchanged after conditioning on test type. The final Column of Table A1 shows the results of a specification that uses standardized test scores as the dependent variable and the indicators for the specific tests as the independent variables, with the tests ordered from those with the largest coefficients to the smallest, and with “miscellaneous” test types serving as the reference category. The results show that the tests which seem likely to have been taken by a positively selected subset of NLS-OC respondents also have higher average standardized scores. For instance three of the four tests with the highest average standardized scores are the SAT, the ACT, and the National Merit Scholarship Qualifying Test. Overall, the patterns in Columns 3-5 of Table A1 are consistent with test publishers providing moments from norming samples that, if not fully nationally representative, are at a minimum more representative than the populations that naturally select into taking the tests.

Education gaps in the Census

Table A2 reports estimated Black-white gaps in years of completed education using Census/ACS samples with similar constructions as the longitudinal samples from the main paper. Specifically I use the 1970-2000 Decennial Census samples and the 2007 ACS 3-year sample and the 2012 and 2017 ACS 5-year samples prepared by Ruggles et. al (2021) and restrict each sample to Black or non-Hispanic white men ages 21-37 and not currently enrolled in school, and then estimate separate Black-white education gaps for the 1941-1951 cohorts, the 1957-1964 cohorts, and the 1980-1984 cohorts, which respectively correspond to the cohorts represented in the NLS-OC, NLSY-79 and NLSY-97.

The gaps in Table A2 are very similar to those reported in the Table 2 of the main paper for the NLSY-79 cohorts (.95 years vs. .83 years) and for the NLSY-97 cohorts (1.01 years versus 1.12 years). The gap for the NLS-OC cohorts is much larger in Table A2 than in Table 2 (1.58 years versus 1.01 years). But as discussed in the main paper this is due to the test score collection procedures in the NLS-OC, and the gap in Table A2 is very similar to the gap in the full NLS-OC sample as reported in Table 4 of the main paper (1.58 years vs. 1.69 years). This suggests that the education gaps observed in the relatively small longitudinal surveys from the main paper are highly consistent with estimates from the much larger Census and ACS samples.

Additional Intensive and Extensive Margins

Table 6 of the main paper reported results for the most widely studied intensive margin labor market outcome, hourly wages, and showed that in contrast to total earning there were not monotonic increases in the wage returns to human capital or in the explanatory power of human capital for hourly wage gaps. In addition to hourly wages, important intensive earnings margins include the number of weeks worked over the course of the year and the number of hours worked in a typical week, and an additional intensive margin earnings measure that simultaneously incorporates hourly wages, hours worked per week, and weeks worked per year is total earnings among men with positive earnings.

The results for these alternative intensive margins are reported in Table A3 are all similar to the hourly wage results in Table 6 of the main paper: The change in the Black-white gap after conditioning on human capital grows between the NLS-OC and NLSY-79, but then falls between the NLSY-79 and NLSY-97. Especially for hours worked, the observed patterns are somewhat erratic, and conditioning on human capital sometimes actually increases the Black-white gap in hours, suggesting that this is not a particularly relevant margin in the current application.

Given that the growing importance of human capital for explaining Black-white gaps in total earnings occurs primarily at the extensive margin, it is useful to distinguish between different reasons for non-work.

Three broad categories of non-work, all of which have been shown to differ significantly by race, are incarceration, unemployment, and labor force withdrawal. To better understand which types of non-employment are most relevant, Table A4 estimates conditional and unconditional Black-white gaps in each of these categories across the three surveys.¹

The results in Table A4 suggest that human capital has become more important for explaining Black-white gaps in all three forms of non-work, although the patterns for specific outcomes are somewhat imprecise at times. For instance with respect to incarceration, in the NLS-OC controlling for educational attainment and test scores does not change the coefficient on the Black indicator, which is just .01 in both specifications. In the NLSY-79 the reduction in the Black-white incarceration gap after controlling for human capital increases to .9 percentage points or 18.2%, and in the NLSY-97 human capital explains .8 percentage points of the racial differential in incarceration rates, which due to lower incarceration rates represents a 25.8% decline.² Similarly, the reduction in Black-white differences in unemployment after accounting for human capital differences increase from .2 percentage points (2.7%) in the NLS-OC, to 1.7 percentage points (29%) in the NLSY-79, to 1.5 percentage points (37.8%) in the NLSY-97. The patterns in Panel C of Table A4 for labor force withdrawal are similar, except that in percentage terms there is a modest decrease in the explanatory power of human capital between the NLSY-79 and NLSY-97 (the level changes for labor force withdrawal increase monotonically across the three surveys).

¹Incarceration status is determined in slightly different ways in each survey. The NLSY-97 contains the most comprehensive incarceration information, with monthly array of incarceration status dating to before the survey itself began; the NLSY-79 interviewed incarcerated participants, and contains a variable indicating whether the respondent's current residence was in a correctional facility; finally the NLSY-OC did not attempt to interview incarcerated members but did list incarceration as one of the reasons for non-interview, allowing me to infer incarceration status. Individuals who are incarcerated are coded to be neither out of the labor force or unemployed, such that the three categories of non-work are mutually exclusive.

²The current data measures incarceration contemporaneously, and comprehensive records of past periods of incarceration or other interactions with the criminal justice system are not available in all three surveys. Because criminal convictions and incarceration reduce future employment opportunities (Western 2002; Neal & Rick 2014), some of the estimated effects for unemployment and labor force withdrawal may partially reflect lagged effects of criminal justice disparities, such that the estimates in Panel A likely understate incarceration's impact on Black-white gaps in non-employment.

Table A1: Evaluating the Validity of NLS-OC Test Score Measures

	NLSY-79, AFQT Scores	NLSY-79, School Survey Test Scores	NLS-OC, Without Test-Type FE	NLS-OC, With Test- Type FE	NLS-OC, Test Score Differences by Test Type
AFQT Score	0.394*** (0.080)		0.174*** (0.035)	0.170*** (0.035)	
School Survey Test Score		0.340*** (0.084)			
Scholastic Aptitude Test					0.541*** (0.077)
American College Testing Program					0.333** (0.131)
Large-Thorndike Intelligence Test					0.257*** (0.095)
National Merit Scholarship Qualifying Test					0.200 (0.281)
Otis/Beta/Gamma Test					0.156** (0.061)
Primary Mental Ability Test					0.123 (0.191)
Iowa Test of Educational Development					-0.016 (0.133)
Henmon Nelson Test					-0.022 (0.084)
CA Test of Mental Maturity Test					-0.046 (0.066)
School and College Ability Test					-0.048 (0.110)
Differential Aptitude Test					-0.333** (0.139)
Test of Educational Ability					-0.358** (0.165)
Observations	10,742	10,742	18,138	18,131	2,801

Notes: Samples indicated in column headings. Dependent variable is earnings in Columns 1-4 and standardized test score in Column 5. Sampling weights applied. Standard errors are clustered at the individual level and reported in parentheses for Columns 1-4, and robust standard errors are reported for Column 5. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table A2: Black-White Gaps in Education in Census/ACS

	Cohorts from NLS-OC	Cohorts from NSLY-79	Cohorts from NLSY-97
Black	-1.58*** (0.01)	-0.95*** (0.01)	-1.01*** (0.01)
Observations	967,582	809,462	545,327

Notes: Table reports regressing years of education onto a Black indicator using Census/ACS samples. To correspond to the samples from the main paper, Column 1 is restricted to the 1941-1951 cohorts, Column 2 is restricted to the 1957-1964 cohorts, and Column 3 is restricted to the 1980-1984 cohorts. All samples are restricted to non-Hispanic Black and white men between ages 21 and 37 who are not currently enrolled in school. Sampling weights applied. Robust standard errors are reported in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table A3: Effects at Additional Intensive Earnings Margins

<i>Panel A: Weeks Worked in the Past Year</i>						
	<u>NLS-OC</u>		<u>NLSY-79</u>		<u>NLSY-97</u>	
	Baseline	With Controls	Baseline	With Controls	Baseline	With Controls
Black	-2.933*** (0.464)	-3.041*** (0.482)	-3.303*** (0.241)	-2.557*** (0.280)	-2.201*** (0.291)	-1.735*** (0.301)
Educational Attainment (years)		0.173*** (0.049)		0.333*** (0.054)		0.543*** (0.054)
Test Score (standard deviations)		-0.276** (0.134)		0.496*** (0.147)		0.043 (0.146)
Observations		16,605		37,661		19,101
Level Change After Covariates		0.11		-0.75		-0.47
Percent Change After Covariates		3.7%		-22.6%		-21.2%
<i>Panel B: Typical Hours Worked Per Week</i>						
	<u>NLS-OC</u>		<u>NLSY-79</u>		<u>NLSY-97</u>	
	Baseline	With Controls	Baseline	With Controls	Baseline	With Controls
Black	-2.239*** (0.284)	-2.532*** (0.336)	-1.162*** (0.335)	-2.227*** (0.414)	-1.894*** (0.323)	-1.486*** (0.350)
Educational Attainment (years)		0.244*** (0.069)		-0.210* (0.112)		0.334*** (0.069)
Test Score (standard deviations)		-0.524*** (0.172)		-0.941*** (0.295)		0.182 (0.199)
Observations		15,713		20,629		19,382
Level Change After Covariates		0.29		1.07		-0.41
Percent Change After Covariates		13.1%		91.7%		-21.5%
<i>Panel C: Total Earnings among Non-Zero Earners</i>						
	<u>NLS-OC</u>		<u>NLSY-79</u>		<u>NLSY-97</u>	
	Baseline	With Controls	Baseline	With Controls	Baseline	With Controls
Black	-0.442*** (0.040)	-0.348*** (0.040)	-0.562*** (0.027)	-0.396*** (0.031)	-0.429*** (0.035)	-0.312*** (0.035)
Educational Attainment (years)		0.061*** (0.005)		0.086*** (0.006)		0.072*** (0.006)
Test Score (standard deviations)		0.030** (0.014)		0.101*** (0.018)		0.074*** (0.018)
Observations		17,116		38,082		20,514
Level Change After Covariates		-0.09		-0.17		-0.12
Percent Change After Covariates		-21.2%		-29.5%		-27.1%

Notes: The dependent variable is indicated in the subtitle for each panel. Observations consist of person-years. All samples are restricted to non-Hispanic Black and white men between the ages of 21 and 37 who are not currently enrolled in school. Sampling weights applied. Standard errors are clustered at the individual level and reported in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.

Table A4: Effects at Additional Extensive Earnings Margins

	<i>Panel A: Incarcerated</i>					
	<u>NLS-OC</u>		<u>NLSY-79</u>		<u>NLSY-97</u>	
	<u>Baseline</u>	<u>With Controls</u>	<u>Baseline</u>	<u>With Controls</u>	<u>Baseline</u>	<u>With Controls</u>
Black	0.010*** (0.003)	0.010*** (0.003)	0.049*** (0.005)	0.040*** (0.005)	0.031*** (0.005)	0.023*** (0.005)
Educational Attainment (years)		-0.000** (0.000)		-0.002*** (0.001)		-0.005*** (0.001)
Test Score (standard deviations)		0.000 (0.001)		-0.007*** (0.002)		-0.003* (0.002)
Observations		16,157		41,291		23,990
Level Change After Covariates		0.000		0.009		0.008
Percent Change After Covariates		0.1%		18.2%		25.8%
	<i>Panel B: Unemployed</i>					
	<u>NLS-OC</u>		<u>NLSY-79</u>		<u>NLSY-97</u>	
	<u>Baseline</u>	<u>With Controls</u>	<u>Baseline</u>	<u>With Controls</u>	<u>Baseline</u>	<u>With Controls</u>
Black	0.056*** (0.009)	0.055*** (0.009)	0.058*** (0.005)	0.041*** (0.005)	0.039*** (0.005)	0.024*** (0.005)
Educational Attainment (years)		-0.002** (0.001)		-0.008*** (0.001)		-0.005*** (0.001)
Test Score (standard deviations)		0.000 (0.002)		-0.010*** (0.003)		-0.010*** (0.002)
Observations		18,298		42,888		23,341
Level Change After Covariates		0.002		0.017		0.015
Percent Change After Covariates		2.7%		29.0%		37.8%
	<i>Panel C: Out of Labor Force</i>					
	<u>NLS-OC</u>		<u>NLSY-79</u>		<u>NLSY-97</u>	
	<u>Baseline</u>	<u>With Controls</u>	<u>Baseline</u>	<u>With Controls</u>	<u>Baseline</u>	<u>With Controls</u>
Black	0.028*** (0.008)	0.030*** (0.008)	0.042*** (0.005)	0.022*** (0.006)	0.090*** (0.010)	0.066*** (0.010)
Educational Attainment (years)		-0.006*** (0.001)		-0.003*** (0.001)		-0.011*** (0.002)
Test Score (standard deviations)		0.008** (0.003)		-0.017*** (0.003)		-0.014*** (0.005)
Observations		18,298		42,888		23,341
Level Change After Covariates		-0.002		0.020		0.024
Percent Change After Covariates		-7.0%		47.8%		26.6%

Notes: The dependent variable is indicated in the subtitle for each panel. Observations consist of person-years. All samples are restricted to non-Hispanic Black and white men between the ages of 21 and 37 who are not currently enrolled in school. Sampling weights applied. Standard errors are clustered at the individual level and reported in parentheses. *, ** and *** denote statistical significance at the 10%, 5% and 1% levels, respectively.