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The Effect of Stereotype Threat on Measured Ability Effects in an Outcome Equation:

Let

$$Y = \alpha_0 + \alpha_1 T + \varepsilon, \qquad E(\varepsilon \mid T) = 0.$$

The same equation governs blacks and whites. Let Y_B denote the outcome for whites and let Y_W denote the outcome for whites. T is the "true" test score. T^* is the measured test for blacks:

$$T^* = \gamma_0 + \gamma_1 T + U, \qquad E(U \mid T) = 0.$$

Then we can solve for Y_B as a function of T^* as

$$Y_B = \alpha_0 + \alpha_1 \left[\frac{T^* - \gamma_0 - U}{\gamma_1} \right] + \varepsilon,$$

assuming $\gamma_1 \neq 0$, and black true ability is treated the same as that of whites. Assume $Cov(U, \varepsilon) = 0$.

Substituting T^* for T, we obtain

$$Y_B = \left[\alpha_0 - \frac{\alpha_1 - \gamma_0}{\gamma_1} \right] + \frac{\alpha_1}{\gamma_1} T^* + \left(\varepsilon - \frac{\alpha_1}{\gamma_1} U \right).$$

$\therefore$ Under random sampling, OLS of Y_B on T^* estimates

$$plim \left(\frac{\hat{\alpha}_1}{\gamma_1} \right) = \frac{\alpha_1}{\gamma_1} \left(\frac{\gamma_1^2 \sigma_T^2}{\gamma_1^2 \sigma_T^2 + \sigma_U^2} \right).$$

Since regressions pass through means and using both expressions for Y_B (based on T and T^*), we have that

$$\begin{aligned} E(Y_B) &= \left[\alpha_0 - \alpha_1 \frac{\gamma_0}{\gamma_1} \right] + \left(\frac{\alpha_1}{\gamma_1} \right) \left(\frac{\gamma_1^2 \sigma_T^2}{\gamma_1^2 \sigma_T^2 + \sigma_U^2} \right) E(T^*) \\ &= \alpha_0 + \alpha_1 E(T). \end{aligned}$$

$\therefore$ The estimated intercept is

$$\begin{aligned} \alpha_0 + \alpha_1 E(T) - \left(\frac{\alpha_1}{\gamma_1} \right) \left(\frac{\gamma_1^2 \sigma_T^2}{\gamma_1^2 \sigma_T^2 + \sigma_U^2} \right) E(T^*) &= \alpha_0 + \alpha_1 E(T) - \left(\frac{\alpha_1}{\gamma_1} \right) \left(\frac{\gamma_1^2 \sigma_T^2}{\gamma_1^2 \sigma_T^2 + \sigma_U^2} \right) (\gamma_0 + \gamma_1 E(T)) \\ &= \alpha_0 - \left(\frac{\alpha_1 \gamma_0}{\gamma_1} \right) \left(\frac{\gamma_1^2 \sigma_T^2}{\gamma_1^2 \sigma_T^2 + \sigma_U^2} \right) + \alpha_1 E(T) \left[\frac{\sigma_U^2}{\gamma_1^2 \sigma_T^2 + \sigma_U^2} \right]. \end{aligned}$$

Consider the case when $\sigma_U^2 = 0$, $\gamma_1 = 1$. Stereotype threat just shifts down the mean of the test score uniformly. Then the slope is $plim \left(\frac{\hat{\alpha}_1}{\gamma_1} \right) = \alpha_1$ and the intercept is $\alpha_0 - \left(\frac{\alpha_1 \gamma_0}{\gamma_1} \right)$, which is overstated. If $\gamma_1 < 1$, slope may be overstated. If $\gamma_1 > 1$, the slope is definitely understated. The race dummy is definitely always overstated if $\gamma_0 < 0$, or $\sigma_U^2 > 0$ or both, assuming $\alpha_1 > 0$.

The Effect of Including Schooling in an Outcome Equation:

Write Y as earnings (wages) and T as test score. Let $R = 1$ if black and 0 otherwise. Let $S =$ schooling.

$$Y = \alpha_0 + \alpha_1 R + \alpha_2 T + \alpha_3 S + \varepsilon$$

$$\varepsilon = U - d, \qquad E(U) = 0,$$

where d is discrimination, and $E(d) = 0$. We assume

$$\begin{aligned} &Cov(R, d) > 0, \qquad &&Cov(R, \varepsilon) > 0, \\ &Cov(T, d) < 0, \qquad &&Cov(T, \varepsilon) > 0, \\ &Cov(S, d) < 0, \qquad &&Cov(S, \varepsilon) \geq 0, \end{aligned}$$

$$U \perp\!\!\!\perp (R, T, S),$$

where "$\perp\!\!\!\perp$" denotes independence.

Suppose $\alpha_3 = 0$, but we enter it in a regression for Y. Let "$\hat{}$" denote OLS estimate and assume random sampling.

$$\operatorname{plim} \begin{pmatrix} \hat{\alpha}_1 \\ \hat{\alpha}_2 \\ \hat{\alpha}_3 \end{pmatrix} = \begin{pmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \end{pmatrix} + \begin{pmatrix} \sigma_{RR} & \sigma_{RT} & \sigma_{RS} \\ \sigma_{TR} & \sigma_{TT} & \sigma_{TS} \\ \sigma_{SR} & \sigma_{ST} & \sigma_{SS} \end{pmatrix}^{-1} \begin{pmatrix} \sigma_{R\varepsilon} \\ \sigma_{T\varepsilon} \\ \sigma_{S\varepsilon} \end{pmatrix}$$

$$\begin{pmatrix} \sigma_{RR} & \sigma_{RT} & \sigma_{RS} \\ \sigma_{TR} & \sigma_{TT} & \sigma_{TS} \\ \sigma_{SR} & \sigma_{ST} & \sigma_{SS} \end{pmatrix}^{-1} = \frac{1}{|\cdots|} \begin{pmatrix} \begin{vmatrix} \sigma_{TT} & \sigma_{TS} \\ \sigma_{ST} & \sigma_{SS} \end{vmatrix} & - \begin{vmatrix} \sigma_{RT} & \sigma_{RS} \\ \sigma_{ST} & \sigma_{SS} \end{vmatrix} & \begin{vmatrix} \sigma_{RT} & \sigma_{RS} \\ \sigma_{TT} & \sigma_{TS} \end{vmatrix} \\ - \begin{vmatrix} \sigma_{TR} & \sigma_{RS} \\ \sigma_{ST} & \sigma_{SS} \end{vmatrix} & \begin{vmatrix} \sigma_{RR} & \sigma_{RS} \\ \sigma_{SR} & \sigma_{SS} \end{vmatrix} & - \begin{vmatrix} \sigma_{RR} & \sigma_{RS} \\ \sigma_{TR} & \sigma_{TS} \end{vmatrix} \\ \begin{vmatrix} \sigma_{TR} & \sigma_{TT} \\ \sigma_{SR} & \sigma_{ST} \end{vmatrix} & - \begin{vmatrix} \sigma_{RR} & \sigma_{RT} \\ \sigma_{SR} & \sigma_{ST} \end{vmatrix} & \begin{vmatrix} \sigma_{RR} & \sigma_{RT} \\ \sigma_{TR} & \sigma_{TT} \end{vmatrix} \end{pmatrix},$$

where $|\cdots|$ is the determinant and $|\cdots| > 0$.

$$\therefore \operatorname{plim} \hat{\alpha}_1 = \alpha_1 + \frac{1}{|\cdots|} \underbrace{\begin{vmatrix} \sigma_{TT} & \sigma_{TS} \\ \sigma_{ST} & \sigma_{SS} \end{vmatrix}}_{>0} \sigma_{R\varepsilon} - \frac{1}{|\cdots|} \underbrace{\begin{vmatrix} \sigma_{TR} & \sigma_{TS} \\ \sigma_{SR} & \sigma_{SS} \end{vmatrix}}_{?} \sigma_{T\varepsilon} + \frac{1}{|\cdots|} \underbrace{\begin{vmatrix} \sigma_{TR} & \sigma_{TT} \\ \sigma_{SR} & \sigma_{ST} \end{vmatrix}}_{?} \sigma_{S\varepsilon}.$$

Since

$$\sigma_{TR} < 0 \qquad \sigma_{TS} > 0$$
$$\sigma_{SR} < 0 \qquad \sigma_{SS} > 0$$

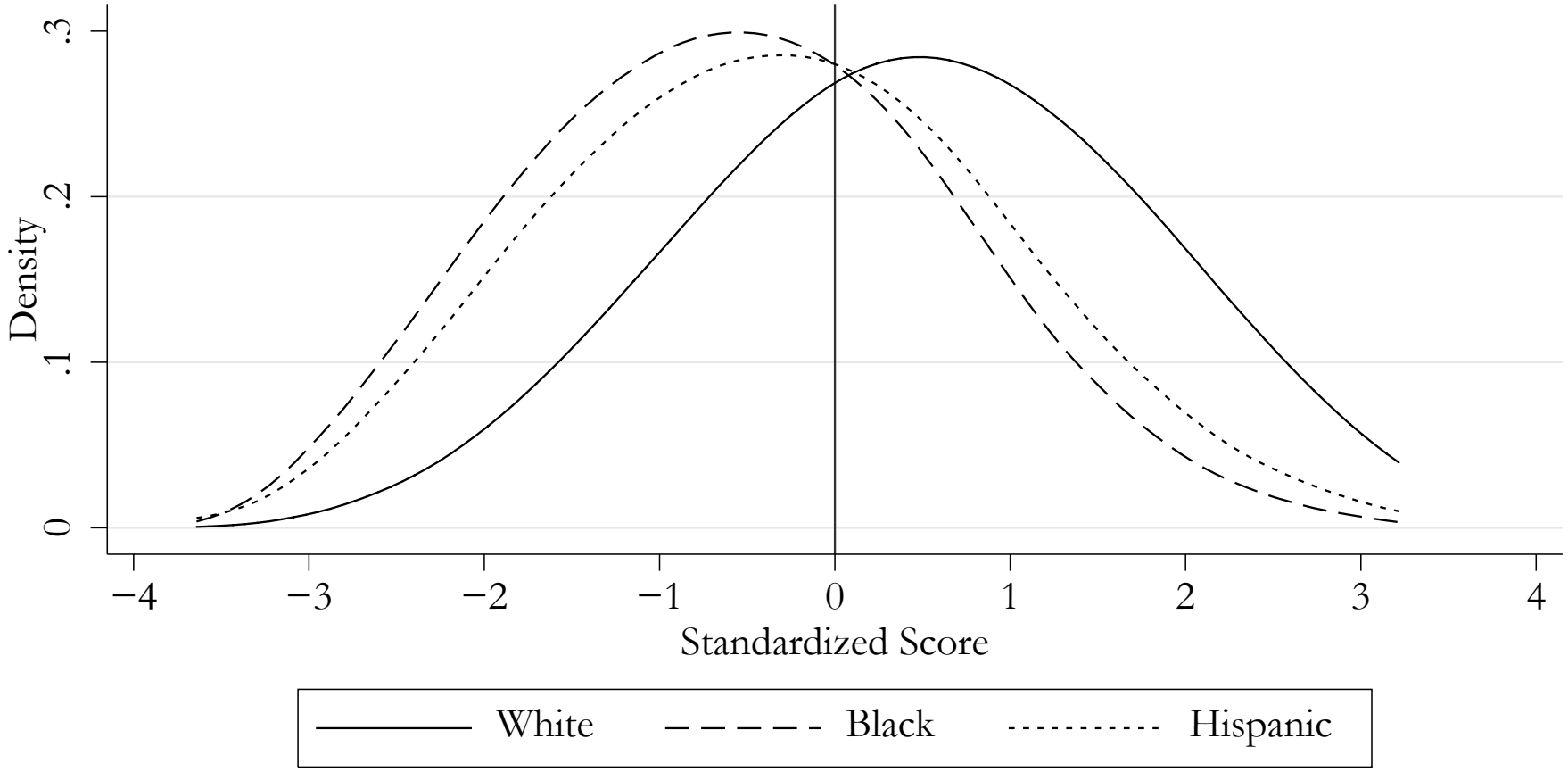
the terms

$$\underbrace{\sigma_{TR}\sigma_{SS}}_{<0} - \underbrace{\sigma_{TS}\sigma_{SR}}_{<0}, \qquad \text{and} \qquad \underbrace{\sigma_{TR}\sigma_{ST}}_{<0} - \underbrace{\sigma_{SR}\sigma_{ST}}_{<0} \qquad \text{are both ambiguous.}$$

Intuition for when the coefficient is overstates. Drop S from the regression (say $\alpha_3 = 0$). Now $\tilde{\alpha}_1$ is upward biased for α_1.

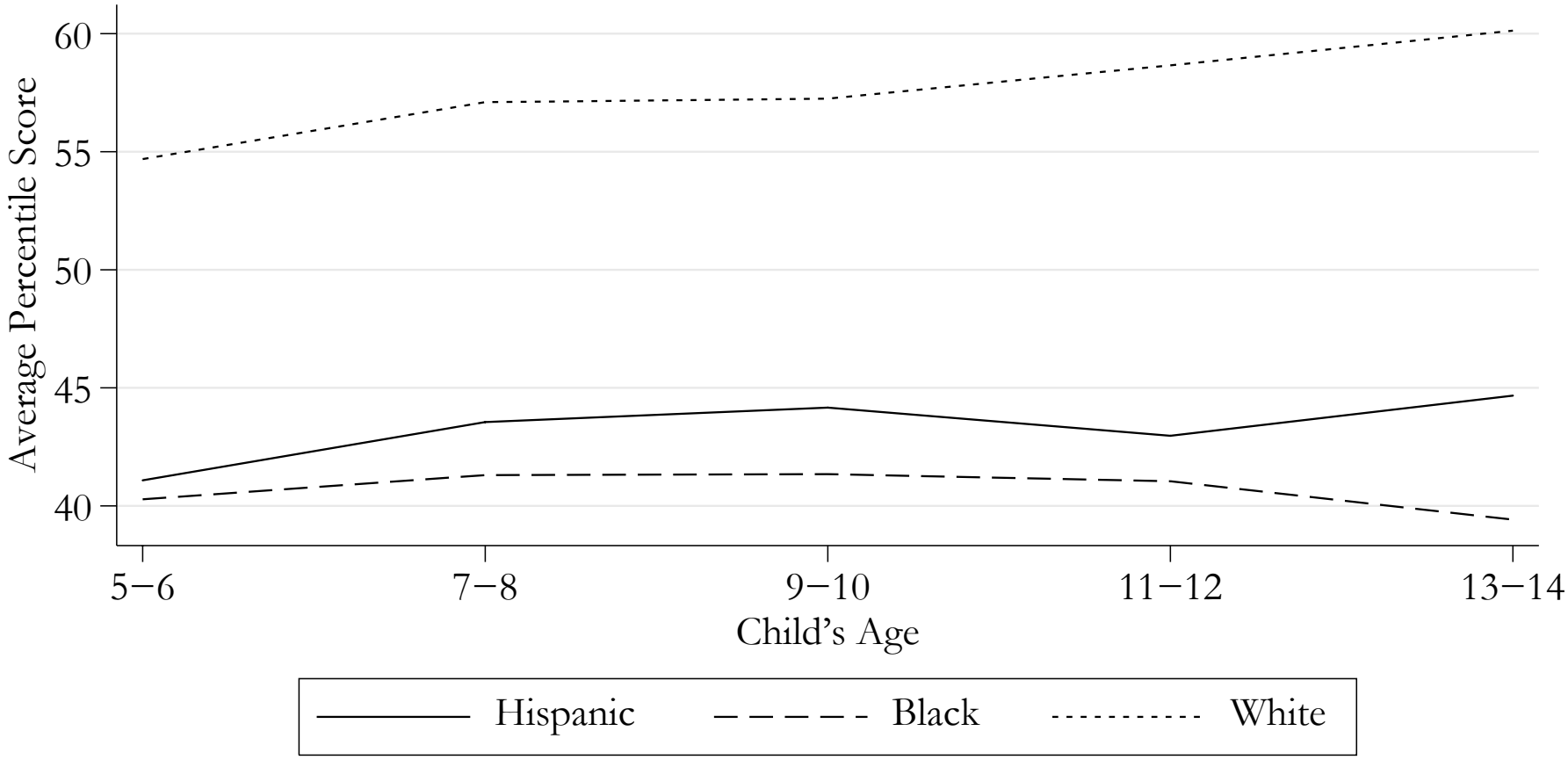
$$\begin{aligned}
\begin{pmatrix} \tilde{\alpha}_1 \\ \tilde{\alpha}_2 \end{pmatrix} &= \begin{pmatrix} \alpha_1 \\ \alpha_2 \end{pmatrix} + \begin{pmatrix} \sigma_{RR} & \sigma_{RT} \\ \sigma_{RT} & \sigma_{TT} \end{pmatrix}^{-1} \begin{pmatrix} \sigma_{R\varepsilon} \\ \sigma_{T\varepsilon} \end{pmatrix} \\
&= \begin{pmatrix} \alpha_1 \\ \alpha_2 \end{pmatrix} + \frac{1}{|\cdots|} \begin{pmatrix} \sigma_{TT} & -\sigma_{RT} \\ -\sigma_{RT} & \sigma_{RR} \end{pmatrix} \begin{pmatrix} \sigma_{R\varepsilon} \\ \sigma_{T\varepsilon} \end{pmatrix} \\
\tilde{\alpha}_1 &= \alpha_1 + \frac{1}{|\cdots|}\underbrace{\sigma_{TT}\sigma_{R\varepsilon}}_{>0} - \frac{1}{|\cdots|}\underbrace{\sigma_{RT}\sigma_{T\varepsilon}}_{<0}, \text{ upward biased.}
\end{aligned}$$

Figure 1
Density of Age−Corrected AFQT
NLSY79 Females Born After 1961



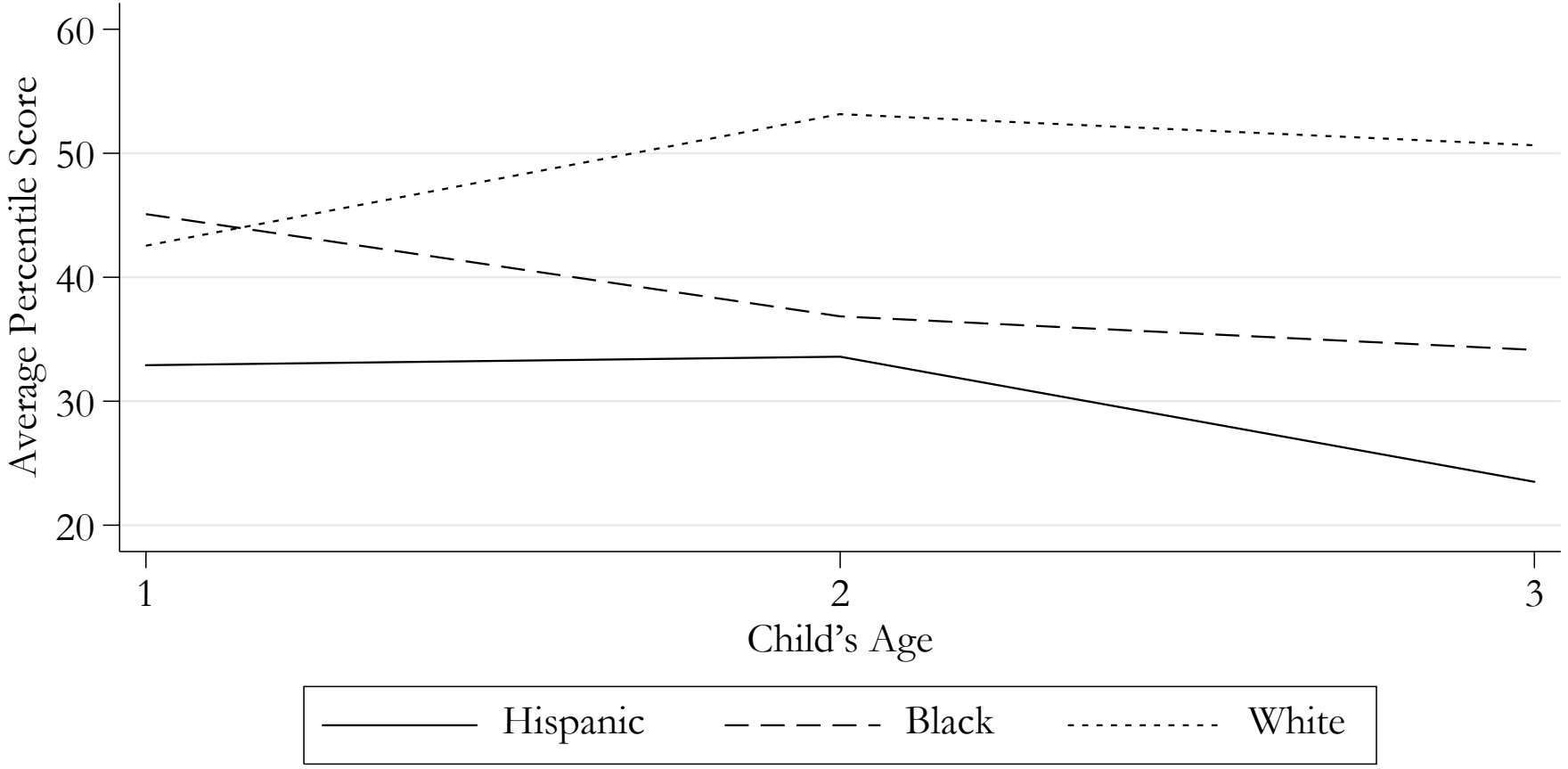
Age−corrected AFQT is the standardized residual from the regression of the AFQT score on age at the time of the test dummy variables. AFQT is a subset of 4 out of 10 ASVAB tests used by the military for enlistment screening and job assignment. It is the summed score from the word knowledge, paragraph comprehension, mathematics knowledge, and arithmetic reasoning ASVAB tests.

Figure 2
Percentile PIAT Math Score By Race and Age Group
Children of NLSY79 Females



This test measures the child's attainment in mathematics as taught in mainstream education. It consists of 84 multiple−choice questions of increasing difficulty, beginning with recognizing numerals and progressing to geometry and trigonometry. The percentile score was calculated separately for each sex at each age.

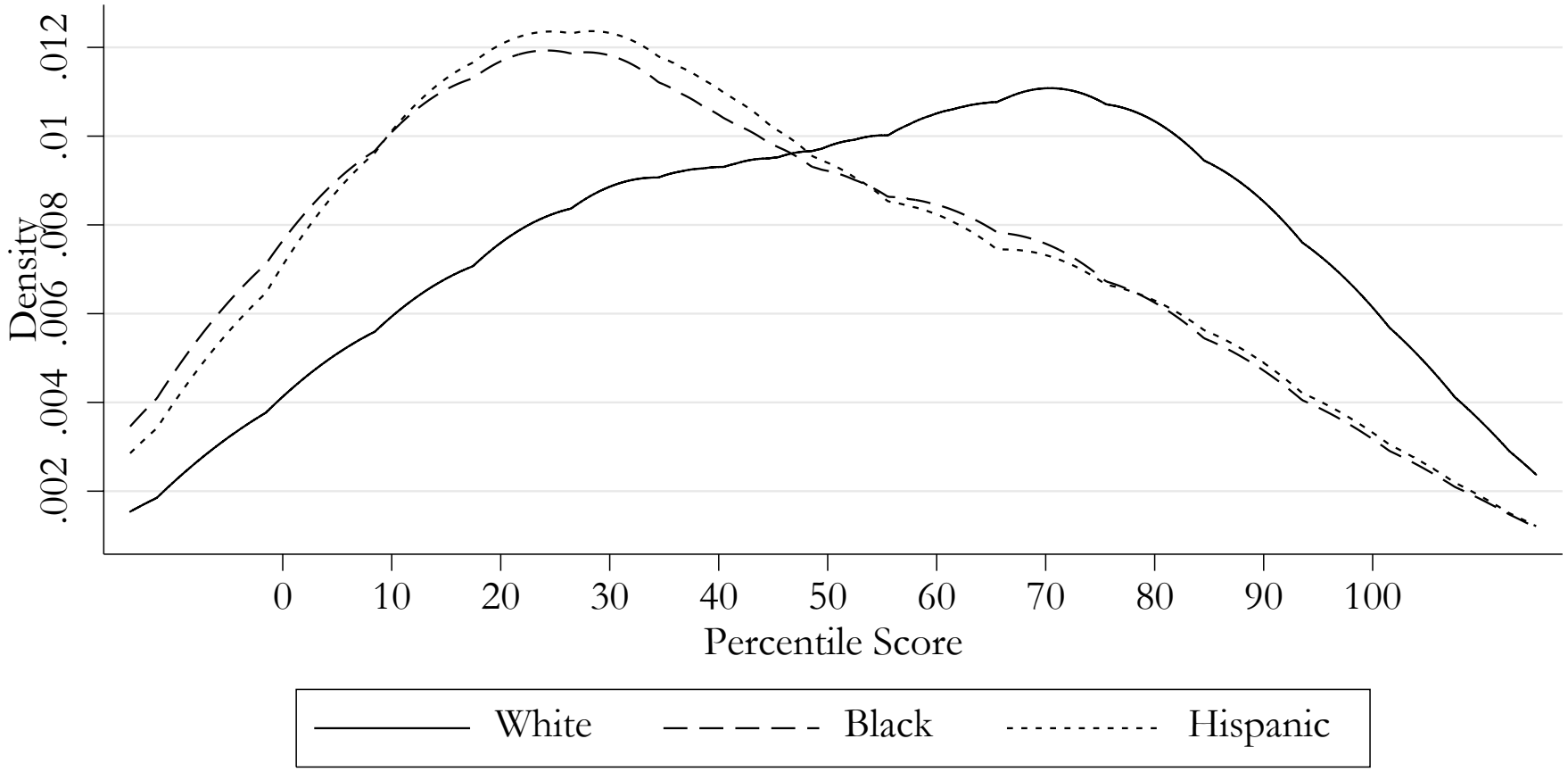
Figure 3
Average Percentile Parts of the Body Score By Race and Age
Children of NLSY79 Females



This test attempts to measure the young child's receptive vocabulary knowledge of orally presented words as a means of estimating intellectual development. The interviewer names each of ten body parts and asks the child to point to that part of the body. The score is computed by summing the number of correct responses. The percentile score was calculated separately for each sex at each age.

Figure 4
Density of Percentile PIAT Math Scores at Ages 5−6

CNLSY 79 Females



This test measures the child's attainment in mathematics as taught in mainstream education. It consists of 84 multiple−choice questions of increasing difficulty, beginning with recognizing numerals and progressing to geometry and trigonometry. The percentile score was calculated separately for each sex at each age.

Figure 5
Density of Mother's Highest Grade Completed

CNLSY79 Males and Females

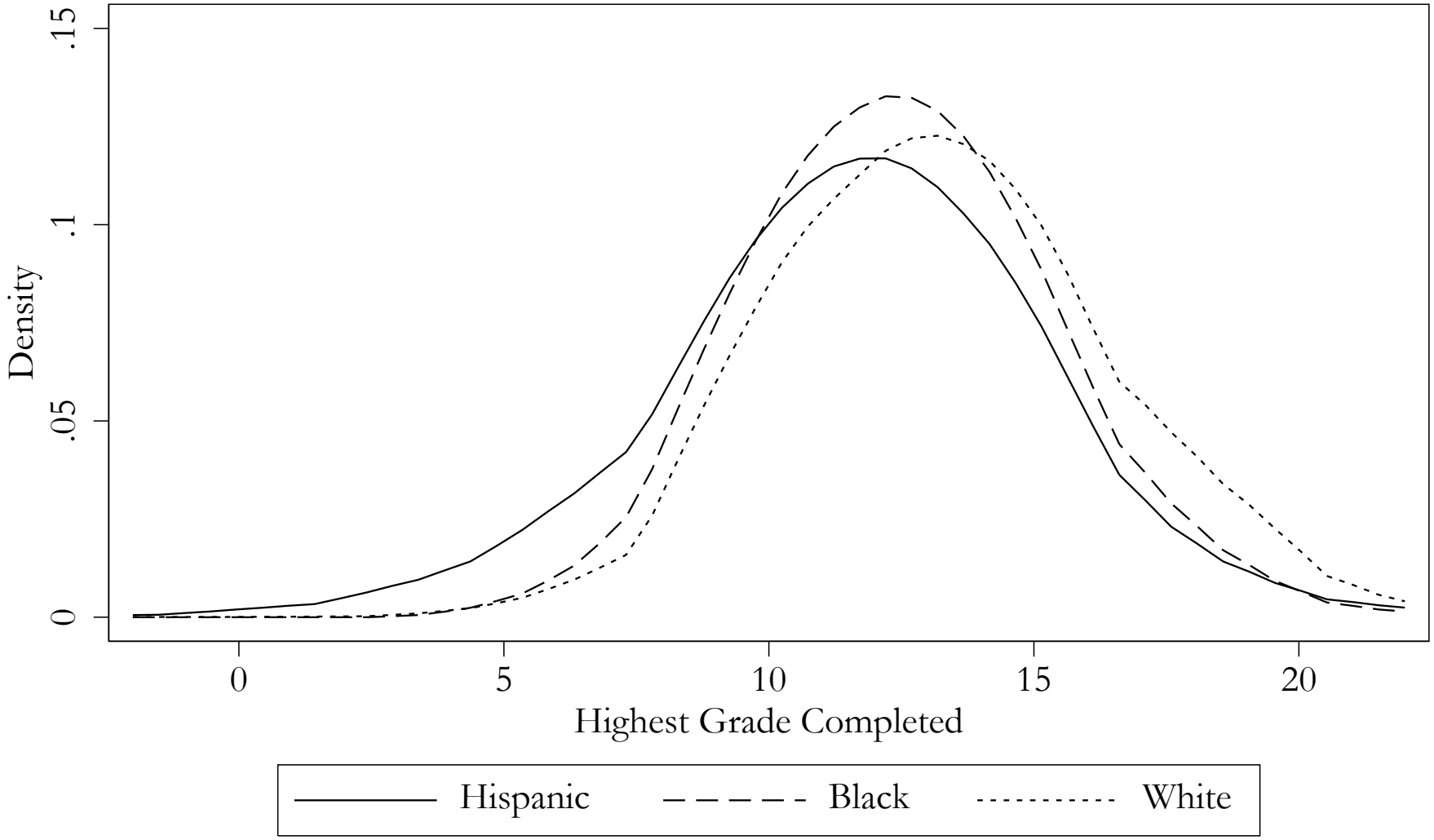
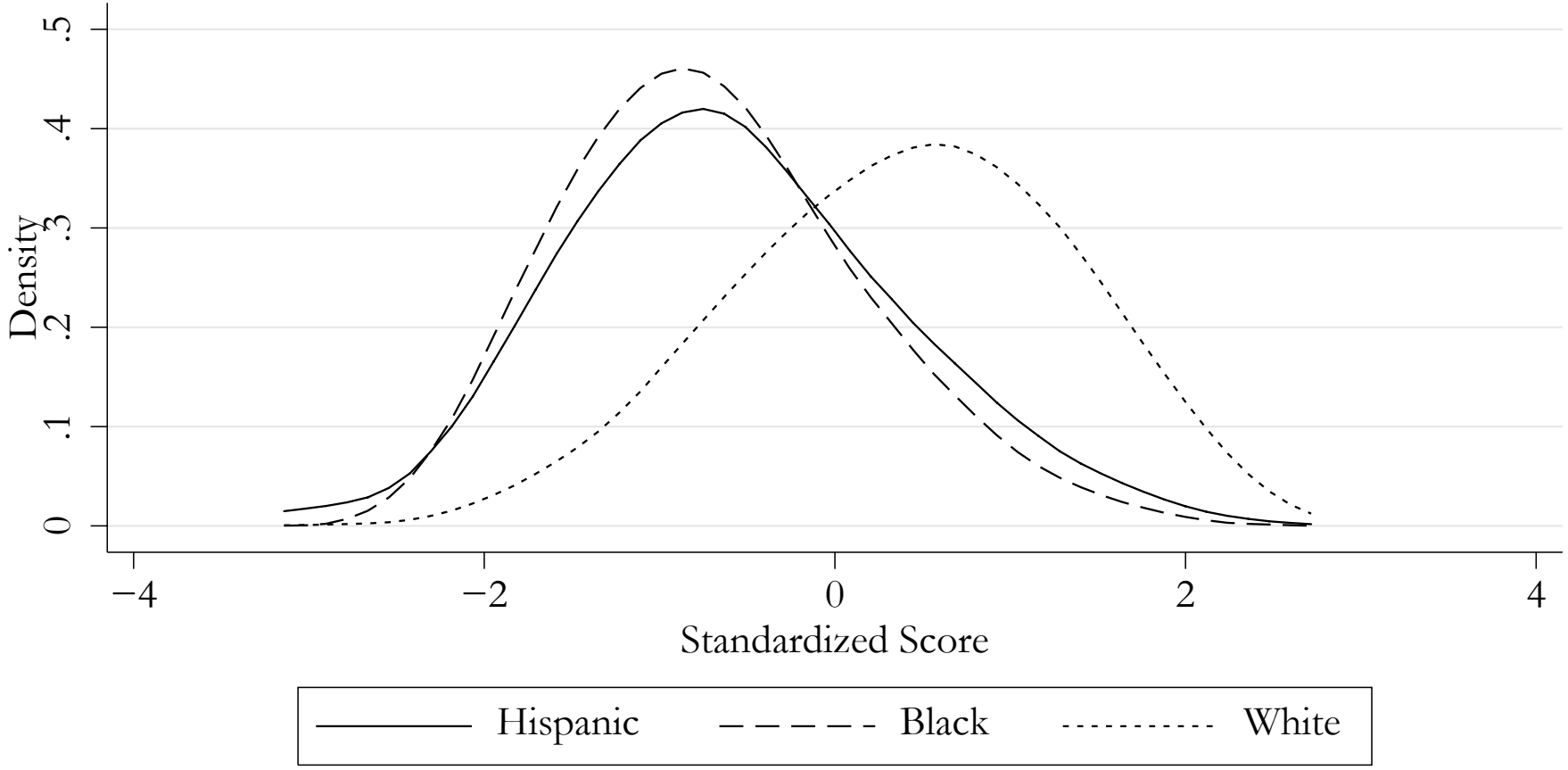
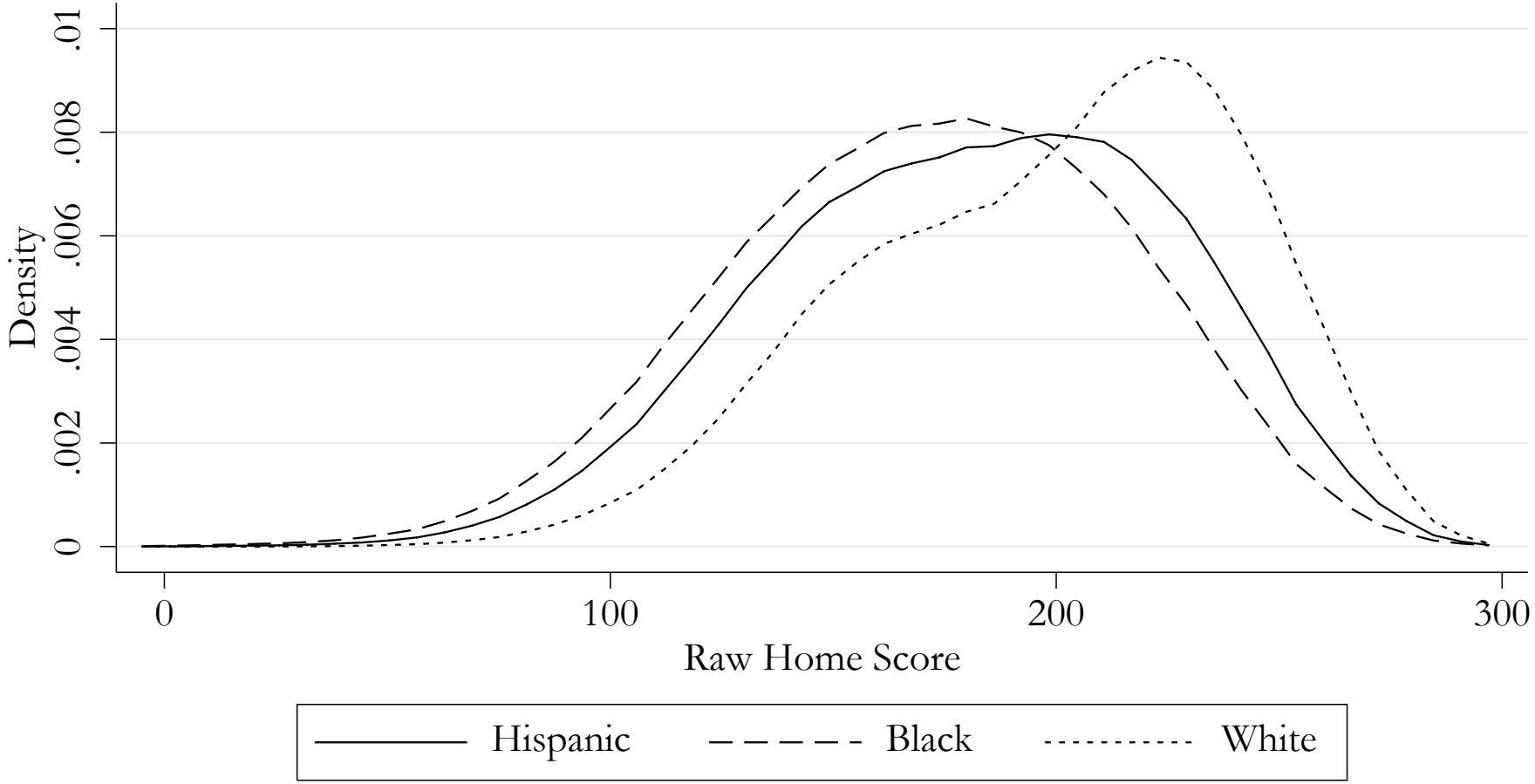


Figure 6
Density of Mother's Age−Corrected AFQT
CNLSY79 Males and Females



Age−corrected AFQT is the standardized residual from the regression of the AFQT score on age at the time of the test dummy variables. AFQT is a subset of 4 out of 10 ASVAB tests used by the military for enlistment screening and job assignment. It is the summed score from the word knowledge, paragraph comprehension, mathematics knowledge, and arithmetic reasoning ASVAB tests.

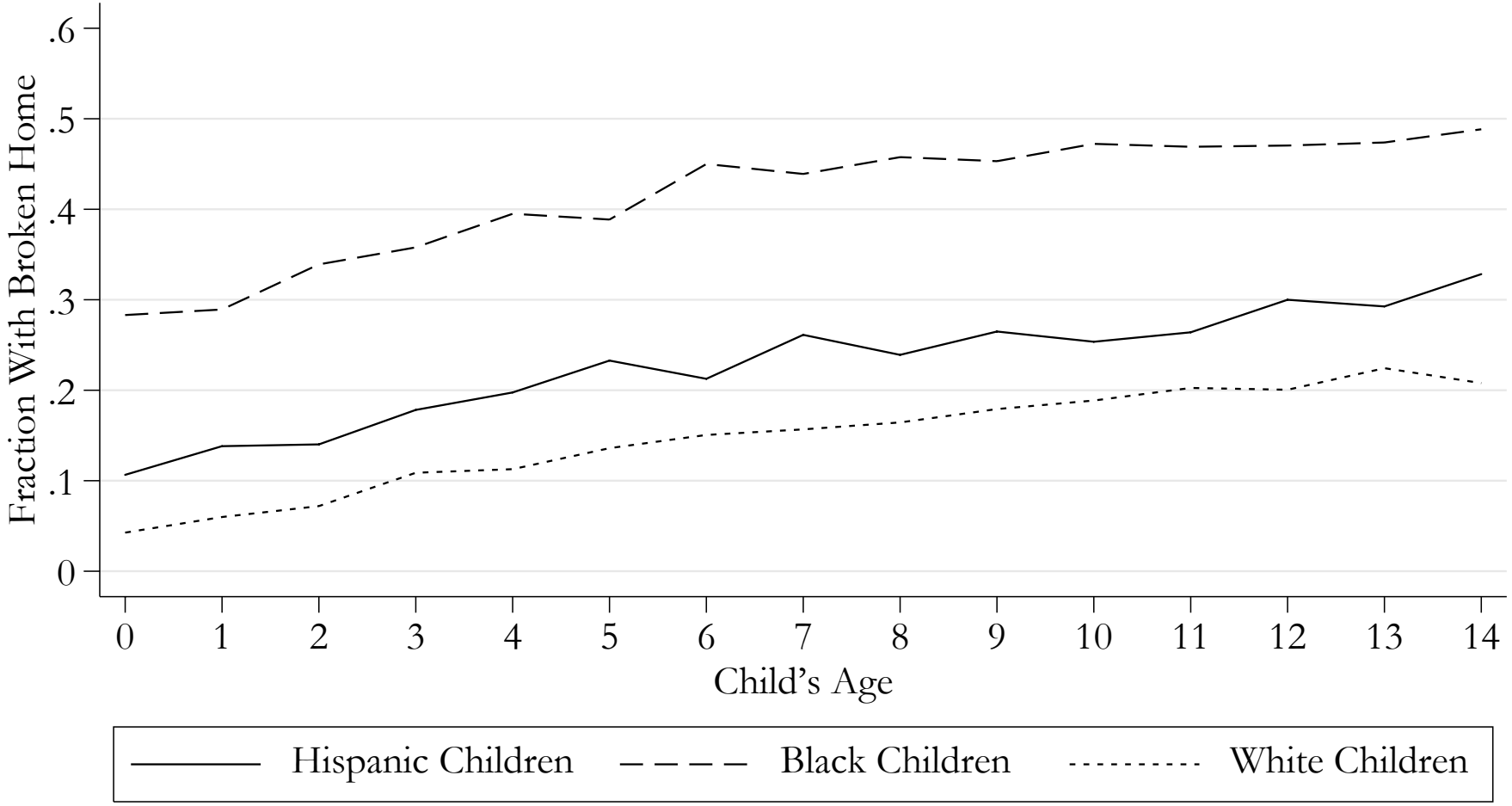
Figure 7
Density of Home Score
CNLSY79 Males and Females



Home Score is an index of the quality of a child's home environment included in CNLSY79. It consists of various measures of age−specific cognitive and emotional stimulation based on dichotomized and summed responses to mother's self−report and interviewer observation.

Figure 8
Fraction of Children Who Live in a Broken Home by Age and Race

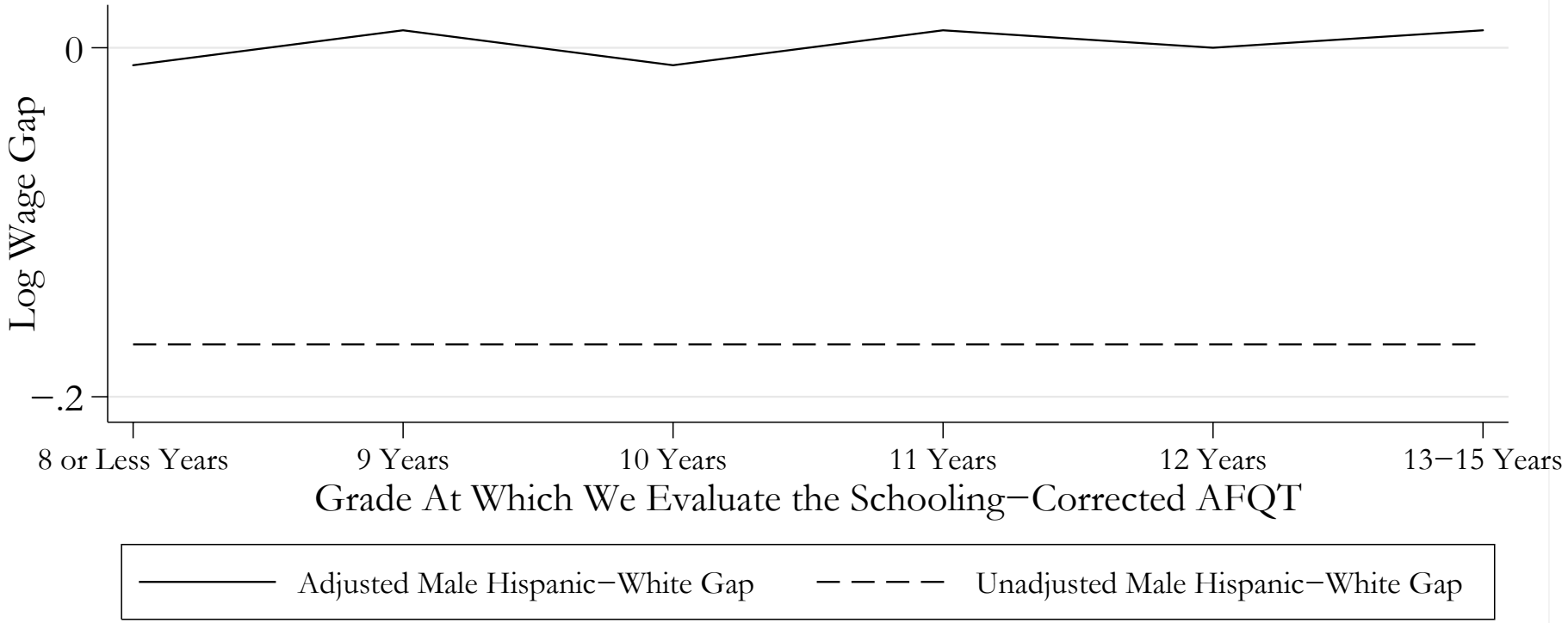
CNLSY79 Males and Females



Note: We define a child living in a broken home as a child not living in a household with two biological parents, or living with the mother and her common law partner

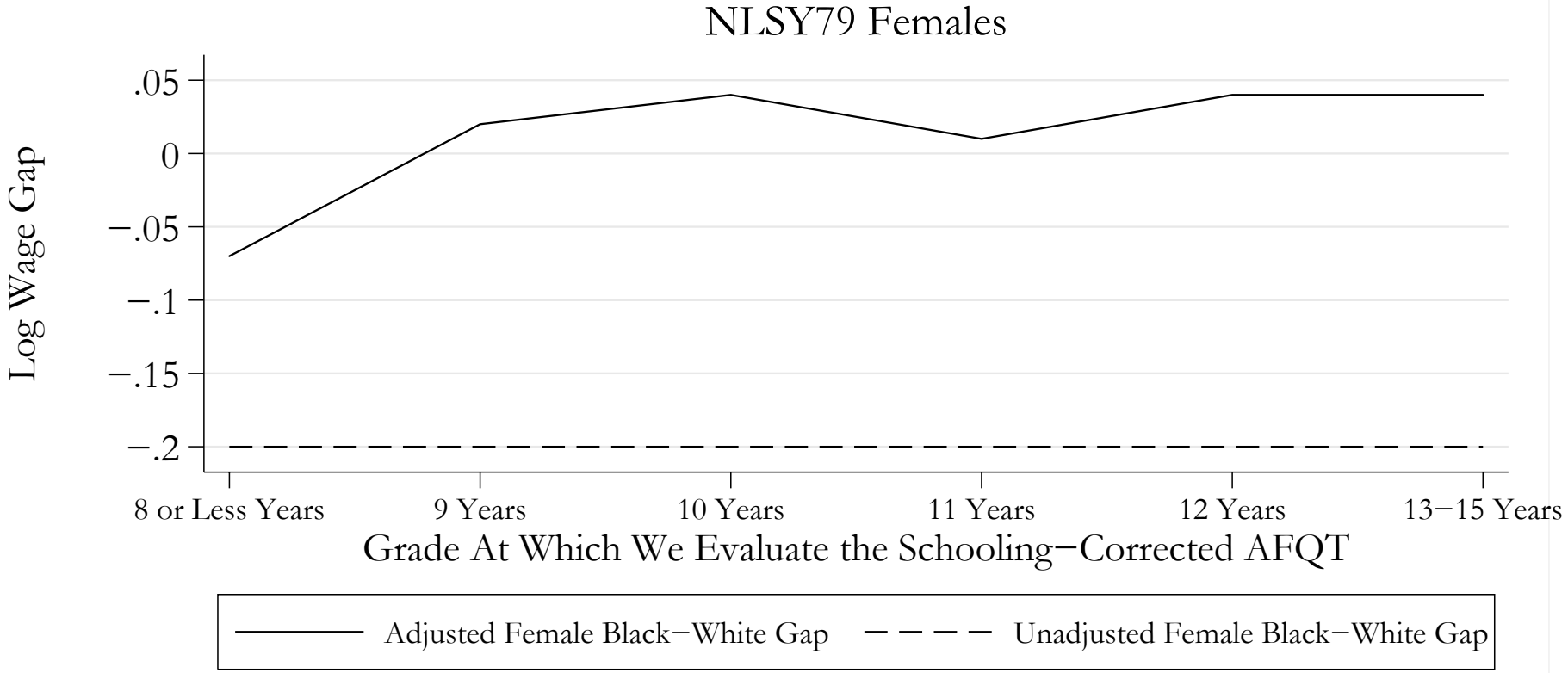
Figure 9A
Residual Hispanic−White Log Wage Gap in 1991 by Grade At Which We Evaluate The Schooling−Corrected AFQT

NLSY79 Males



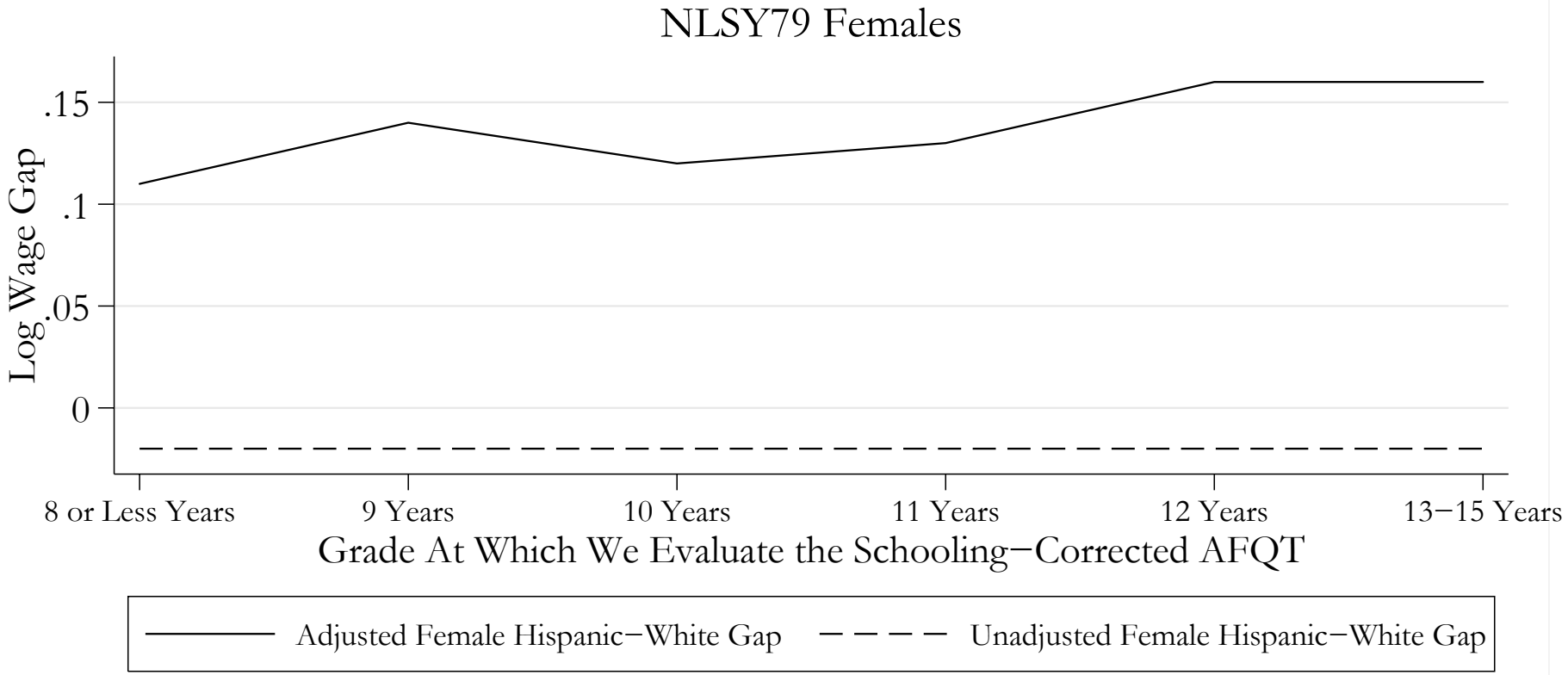
Note: We have omitted the results for the 16−or−More category because the low number of minorities in that cell makes the correction of the test scores to that schooling level much less reliable than the correction to the other schooling levels. The unadjusted line refers to the black−white log wage gap we observe if we do not control for AFQT scores (column I in table 1). Therefore it is a horizontal line since it does not depend on the grade to which we are correcting the test score. The adjusted line refers to the black−white log wage gap we observe after we adjust for the AFQT scores corrected to different grades.

Figure 9B
Residual Black−White Log Wage Gap in 1991 by Grade At Which We Evaluate The Schooling−Corrected AFQT



Note: We have omitted the results for the 16−or−More category because the low number of minorities in that cell makes the correction of the test scores to that schooling level much less reliable than the correction to the other schooling levels. The unadjusted line refers to the black−white log wage gap we observe if we do not control for AFQT scores (column I in table 1). Therefore it is a horizontal line since it does not depend on the grade to which we are correcting the test score. The adjusted line refers to the black−white log wage gap we observe after we adjust for the AFQT scores corrected to different grades.

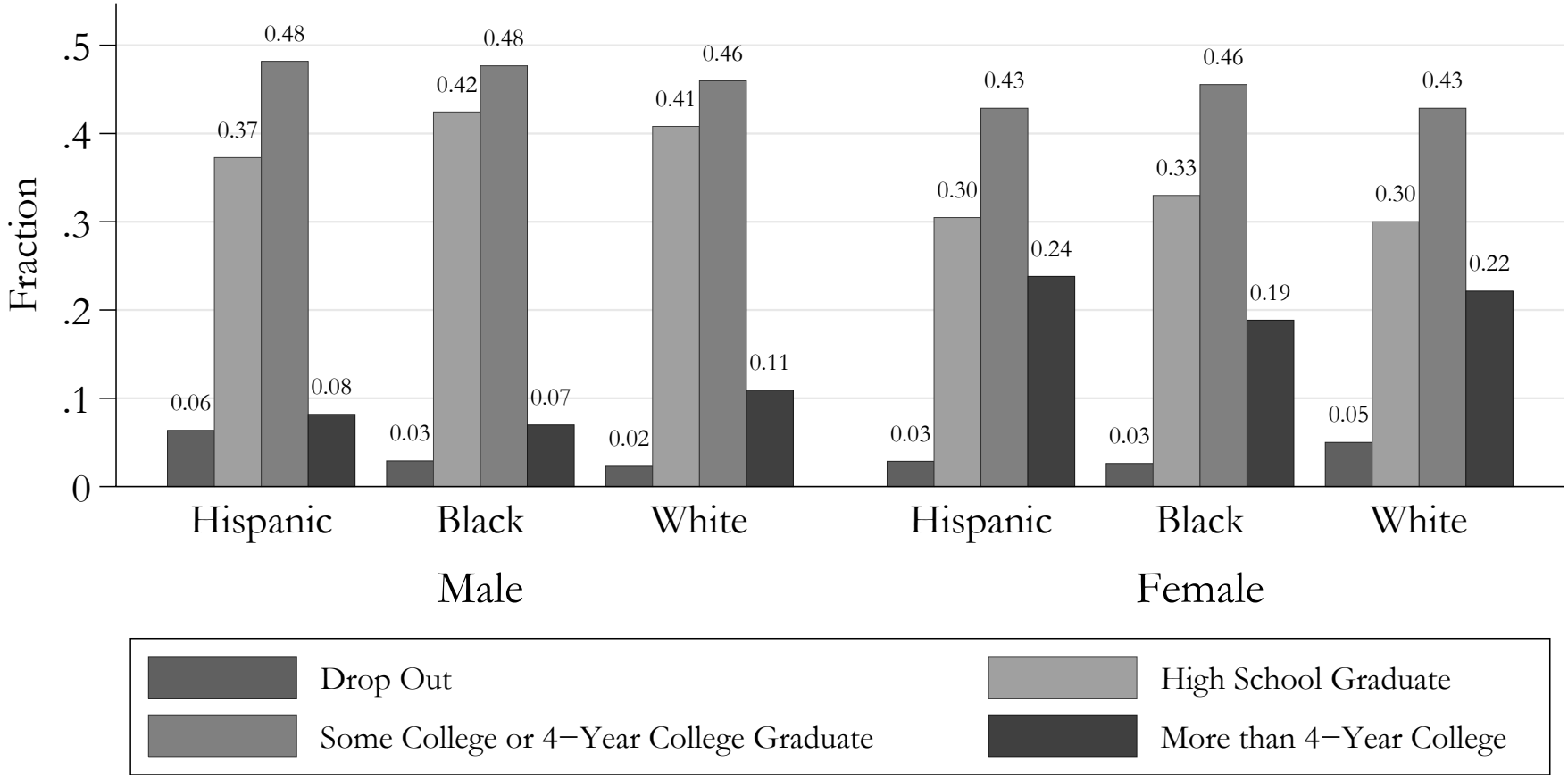
Figure 9C
Residual Hispanic−White Log Wage Gap in 1991 by Grade At Which We Evaluate The Schooling−Corrected AFQT



Note: We have omitted the results for the 16−or−More category because the low number of minorities in that cell makes the correction of the test scores to that schooling level much less reliable than the correction to the other schooling levels. The unadjusted line refers to the black−white log wage gap we observe if we do not control for AFQT scores (column I in table 1). Therefore it is a horizontal line since it does not depend on the grade to which we are correcting the test score. The adjusted line refers to the black−white log wage gap we observe after we adjust for the AFQT scores corrected to different grades.

Figure 10
Young Adult's Own Expected Educational Level at Age 17 by Race and Sex

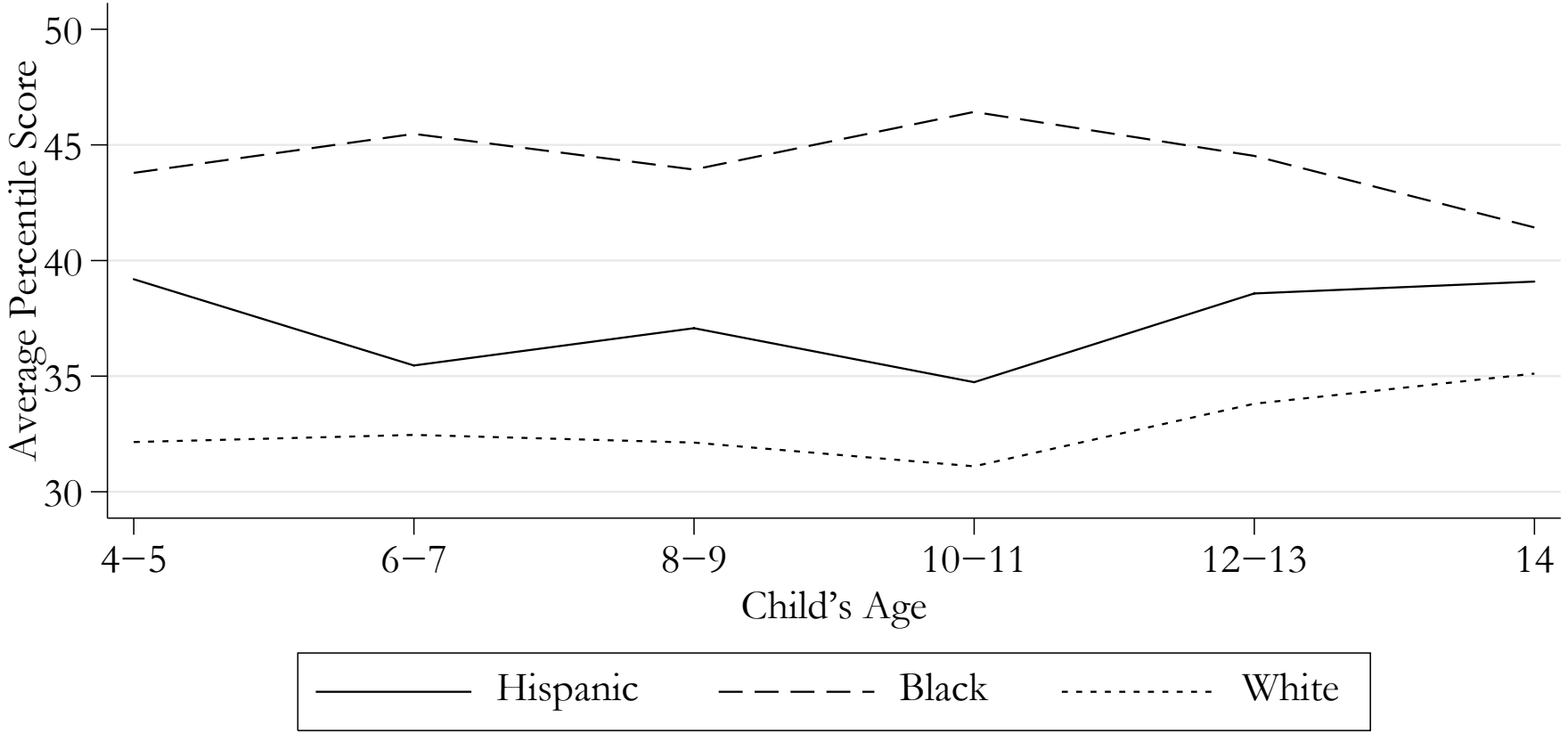
Children of NLSY79



The height of the bar is produced by dividing the number of people who report falling in a particular educationalal cell by the total number of people in their race−sex group.

Figure 11
Percentile Antisocial Behavior Score By Race and Age Group

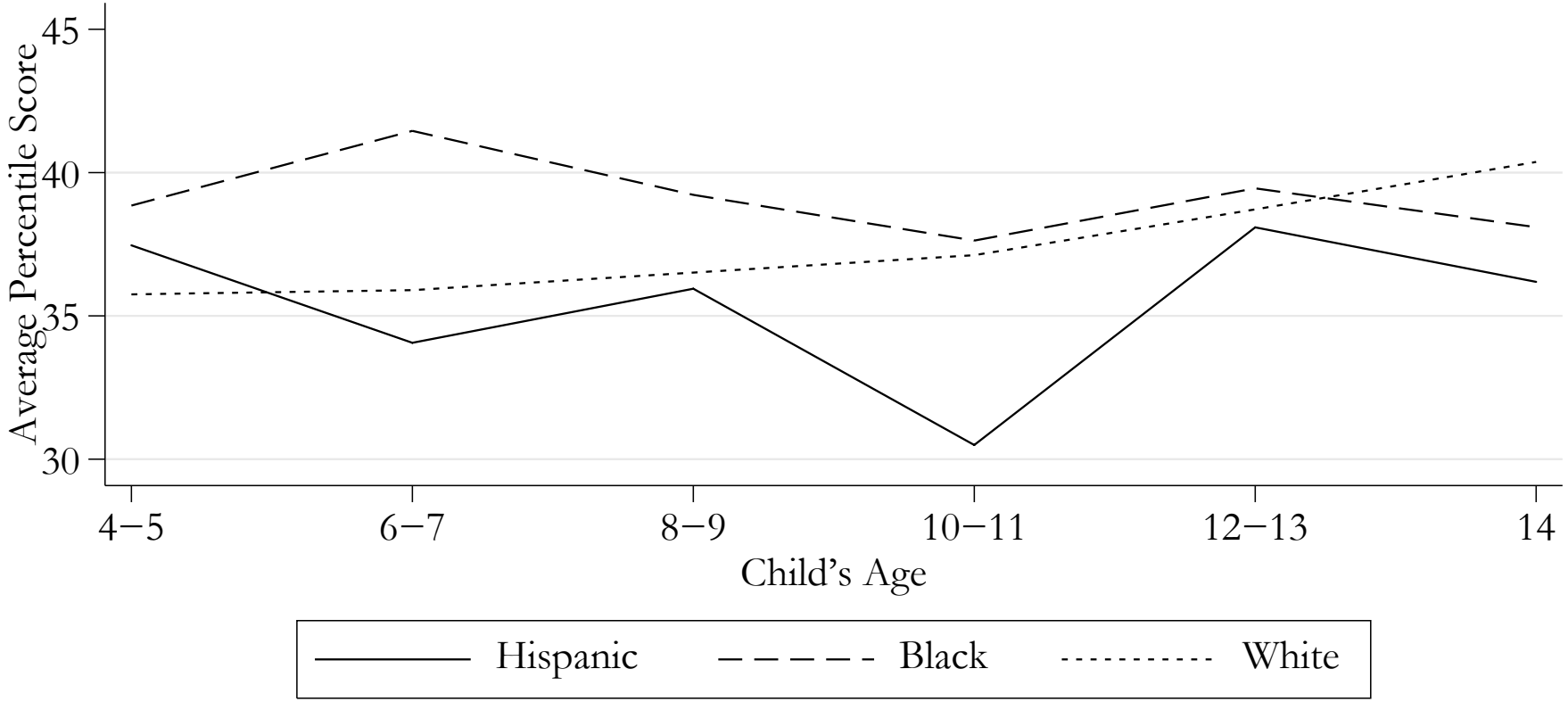
Children of NLSY79 Females



Mothers were asked 28 age−specific questions about frequency, range and type of specific behavior problems that children age four and over may have exhibited in the previous three months. Factor analysis was used to determine six clusters of questions. This test is one such cluster. The responses for each cluster were dichotomized and summed to produce a raw score. The percentile score was then calculated separately for each sex at each age from the raw score A higher percentile score indicates a higher incidence of problems.

Figure 12
Adjusted Percentile Antisocial Behavior Score By Race and Age Group

Children of NLSY79 Females



Adjusted by permanent family income, mother's education and age−corrected AFQT, and home score.
Adjusted indicates that we equalized the family background characteristics across all race groups by setting them at the mean to purge the effect of family environment disparities. Permanent income is constructed by taking the average of annual family income discounted to child's age 0 using a 10% discount rate. Age−corrected AFQT is the standardized residual from the regression of the raw AFQT score on age at the time of the test dummy variables. Home score is an index of quality of the child's home environment.

Figure 13
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1990

NLSY79 Males

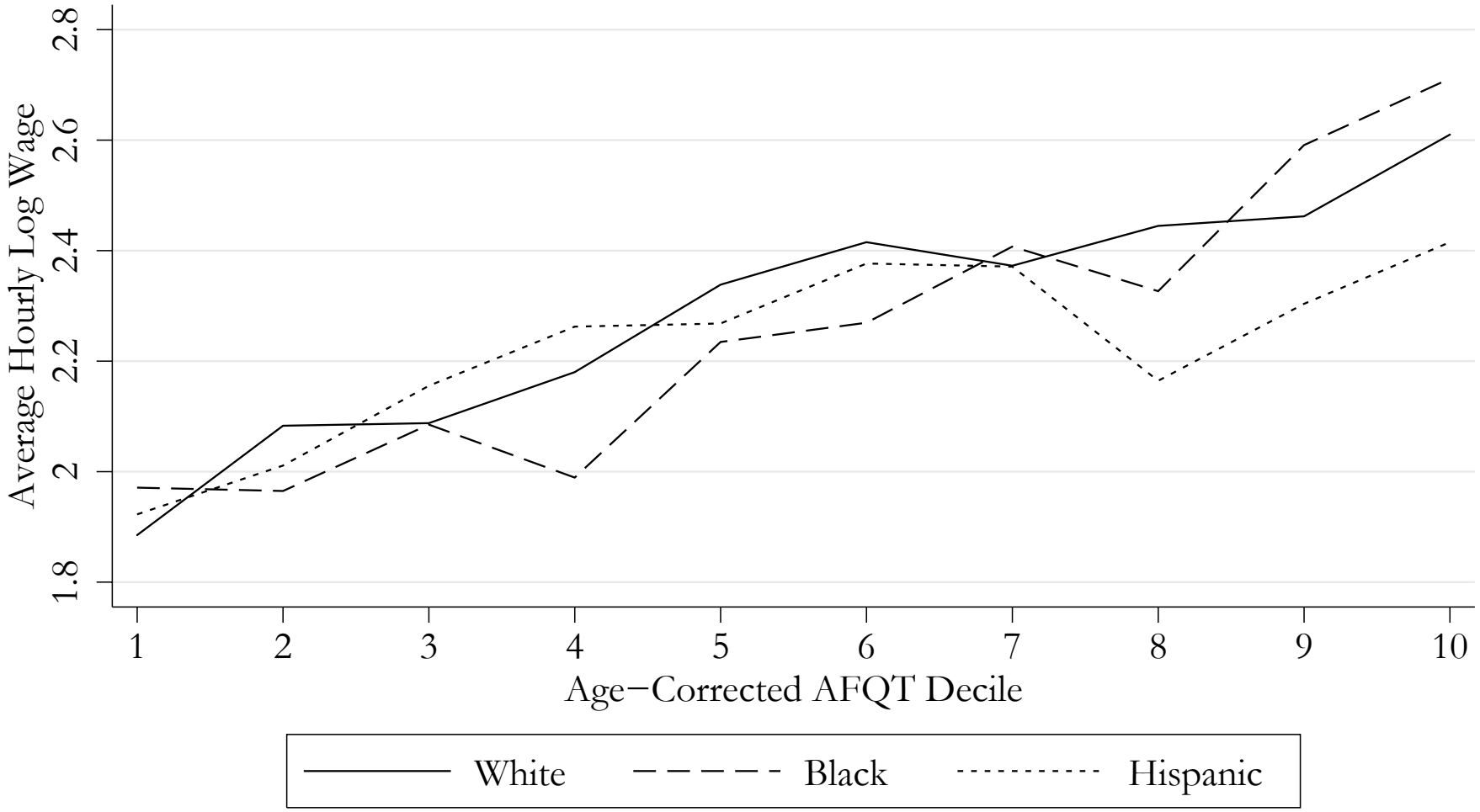


Figure 14
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1991

NLSY79 Males

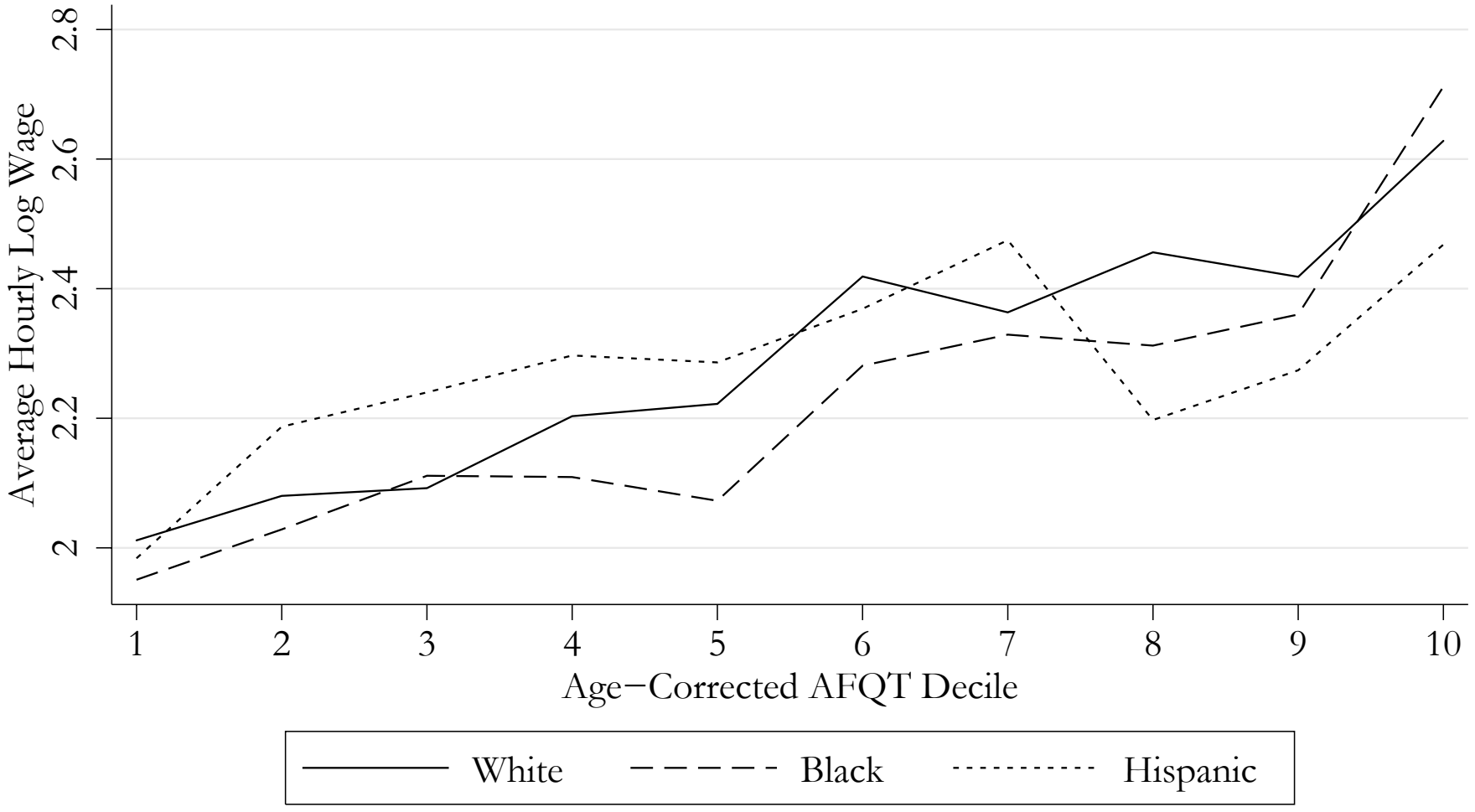


Figure 15
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1992

NLSY79 Males

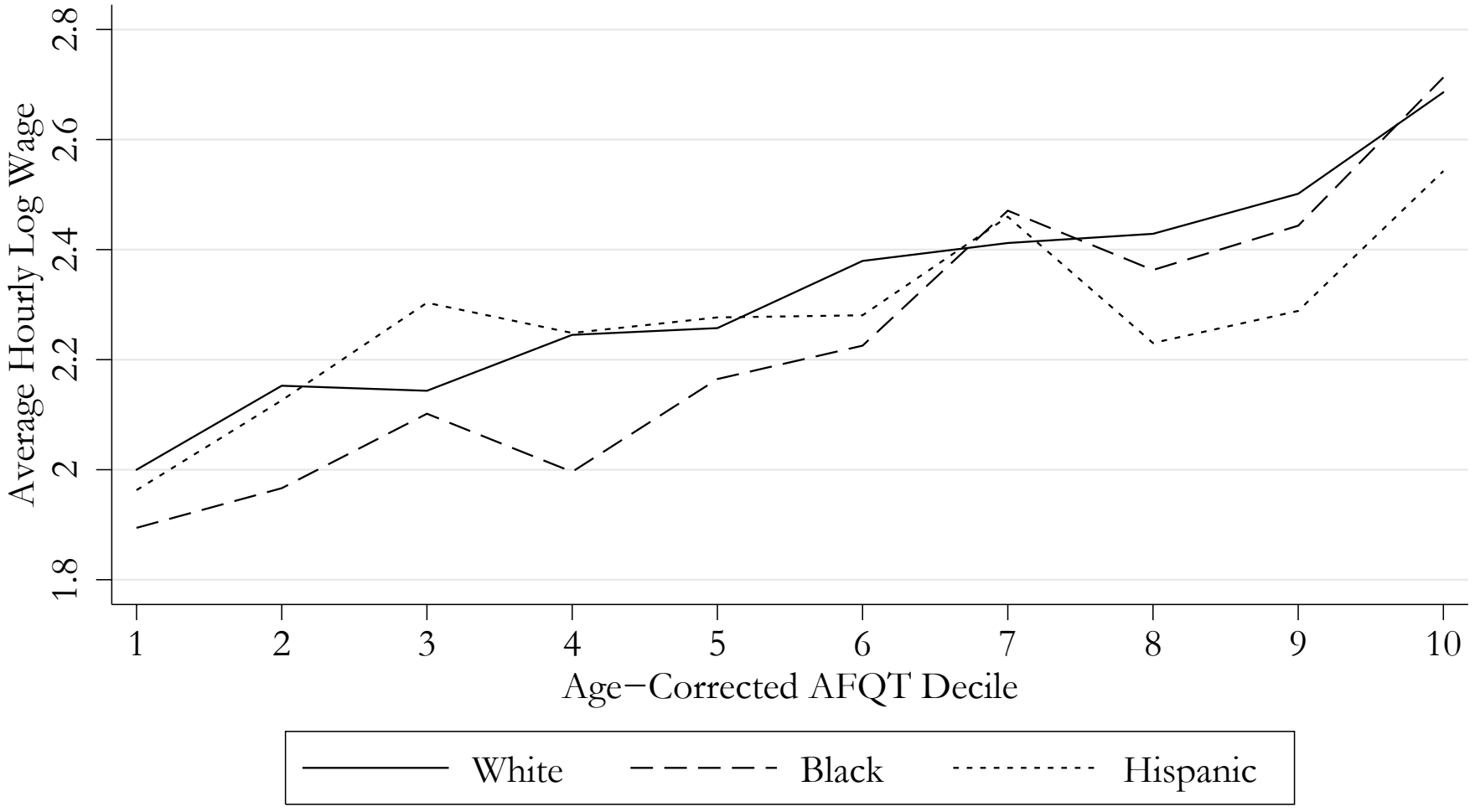


Figure 16
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1993

NLSY79 Males

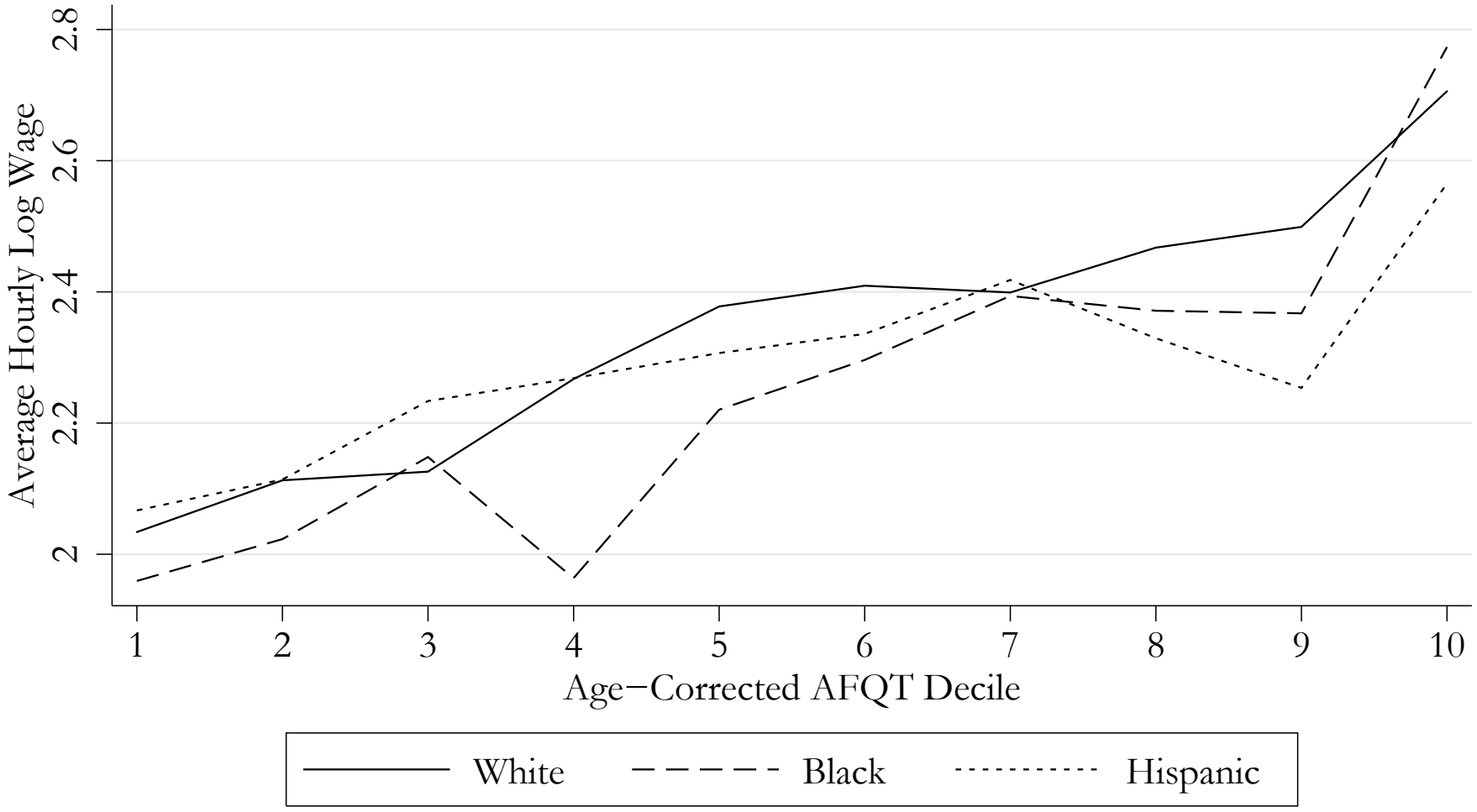


Figure 17
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1994

NLSY79 Males

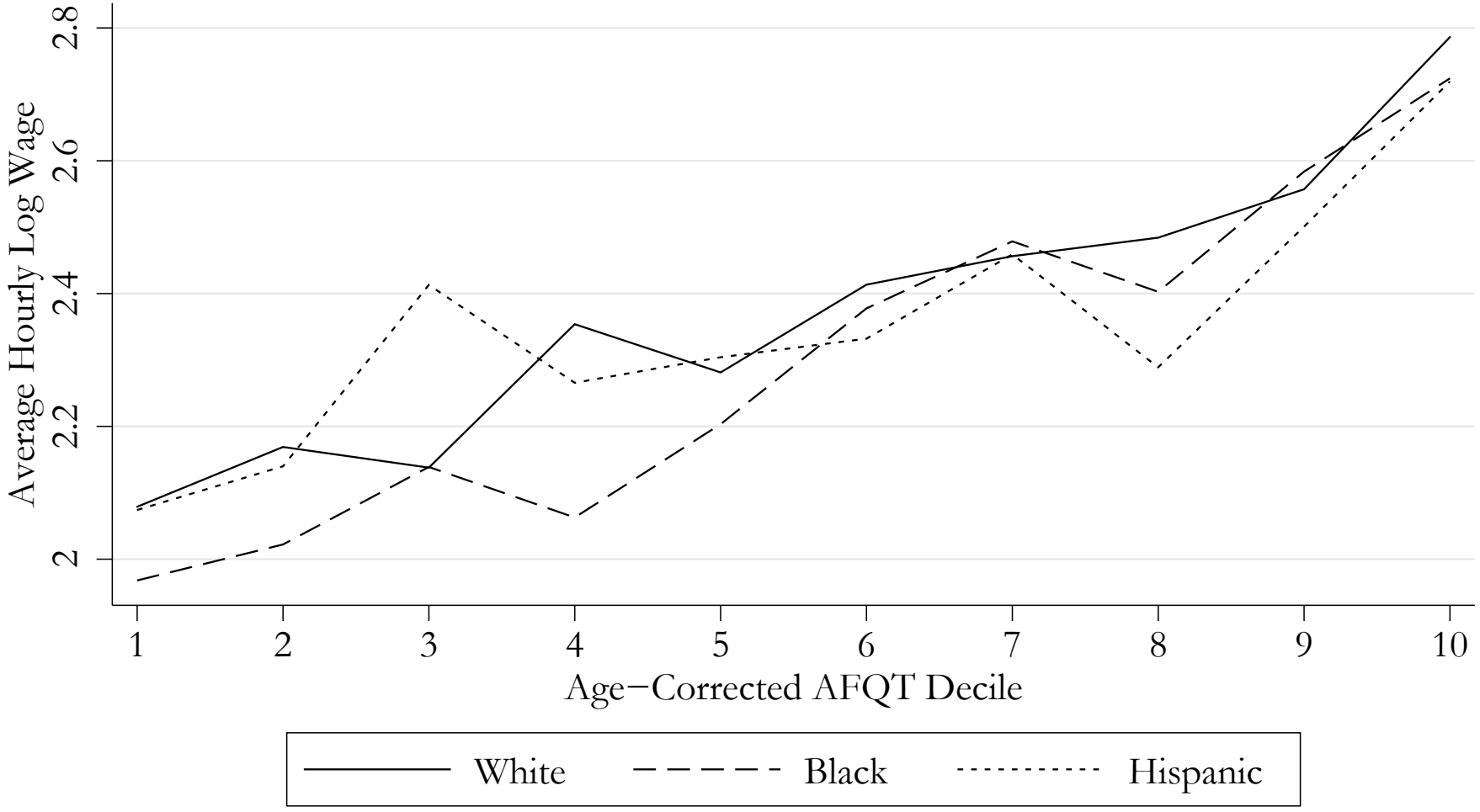


Figure 18
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1996

NLSY79 Males

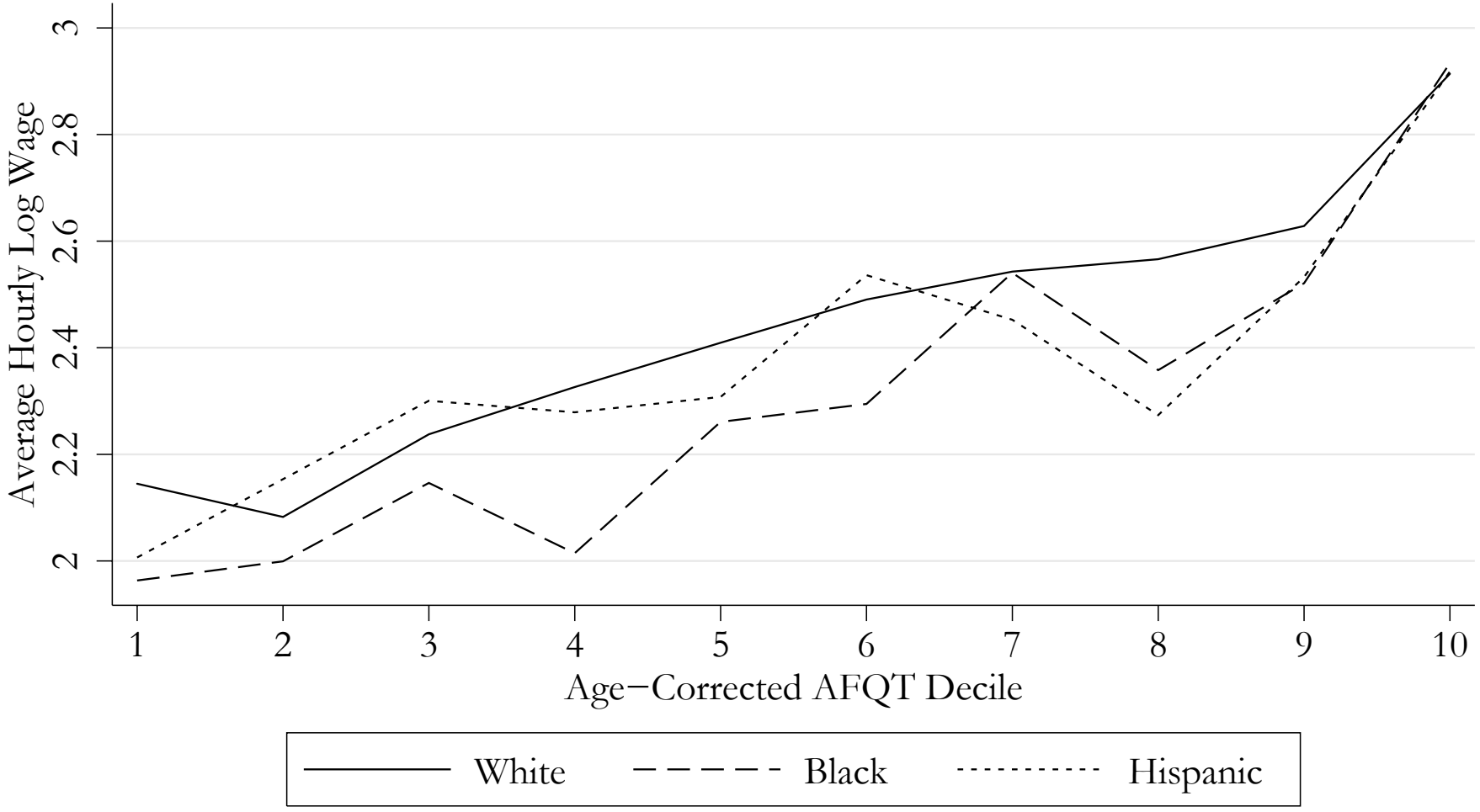


Figure 19
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1998

NLSY79 Males

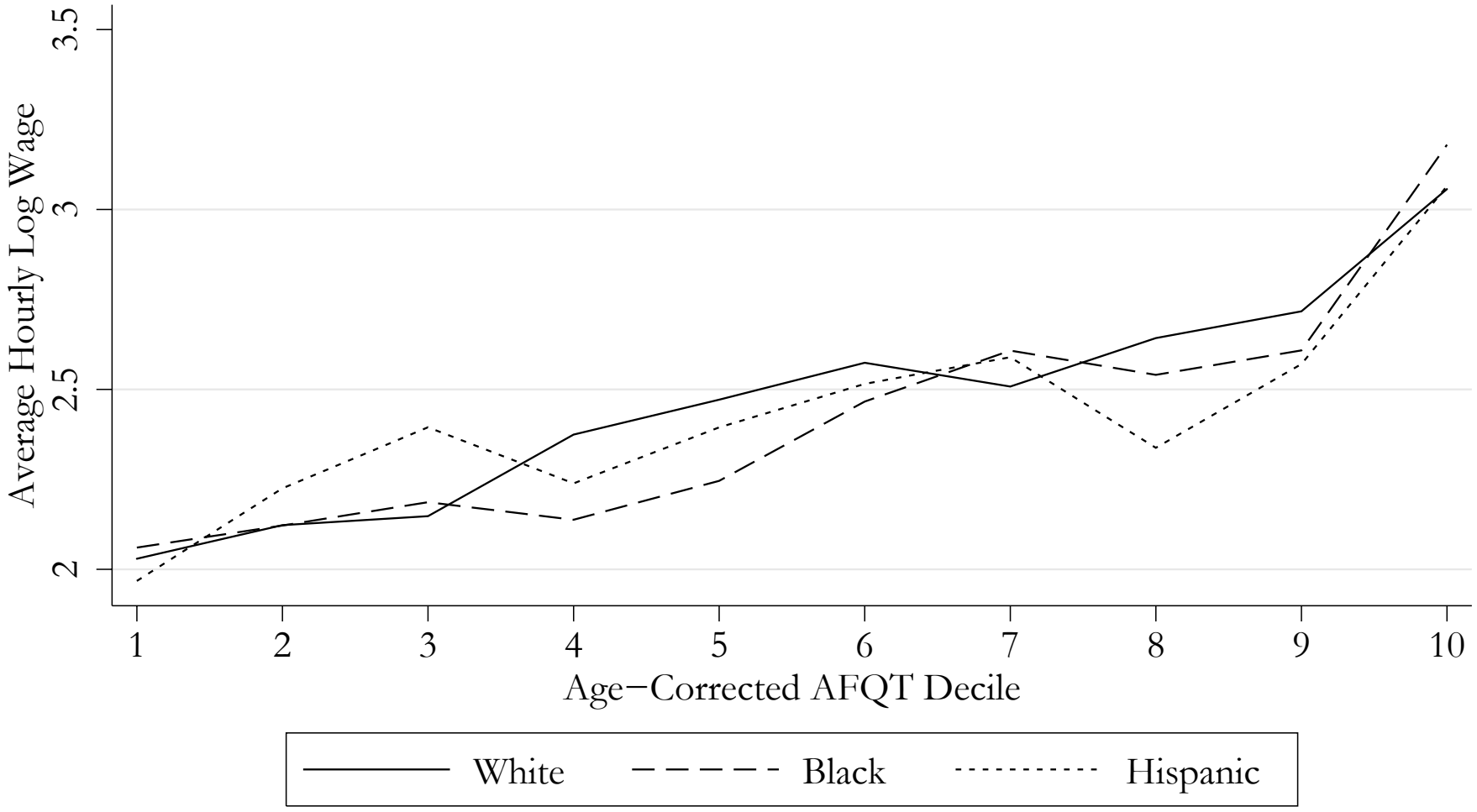


Figure 20
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 2000

NLSY79 Males

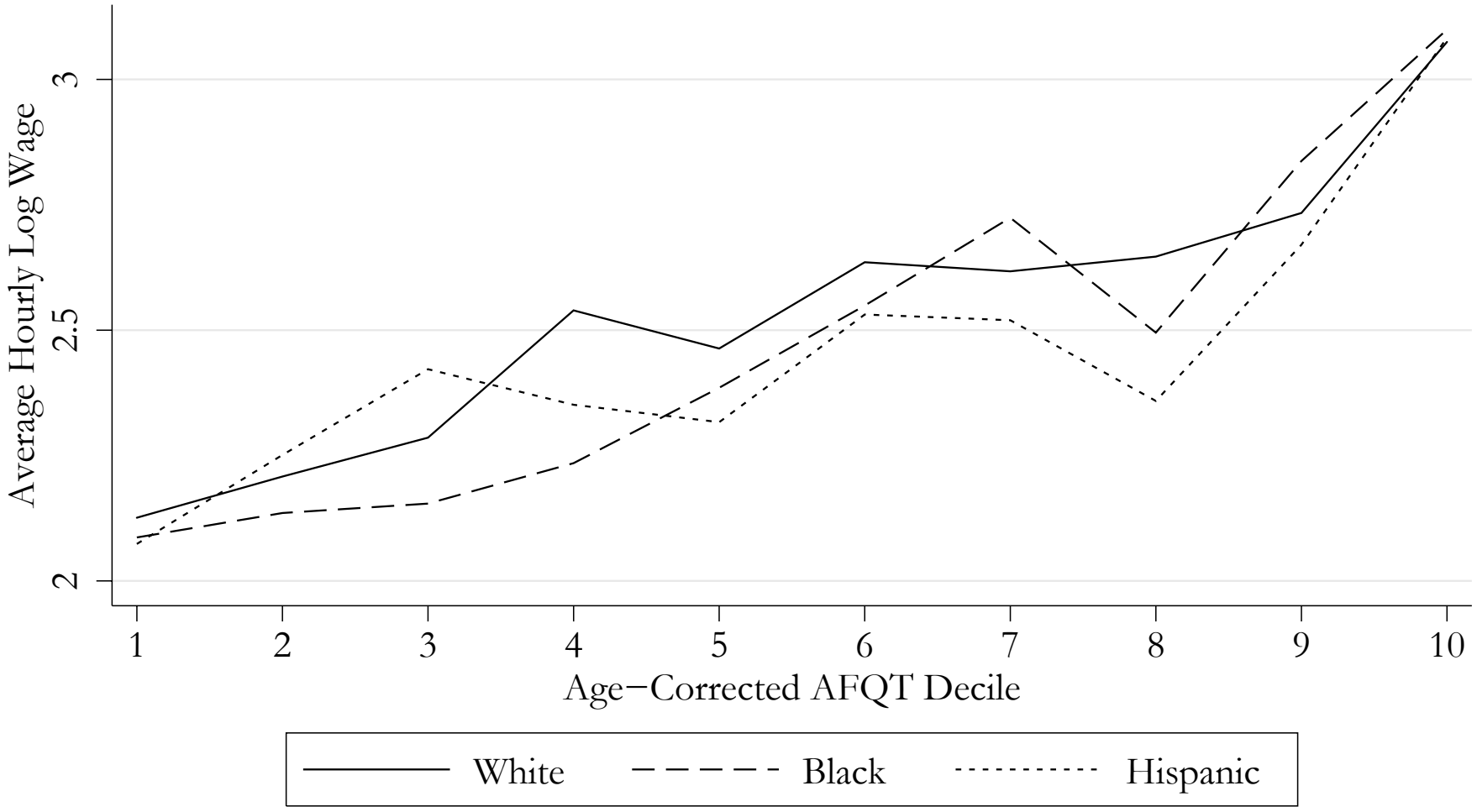


Figure 21
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1990

NLSY79 Females

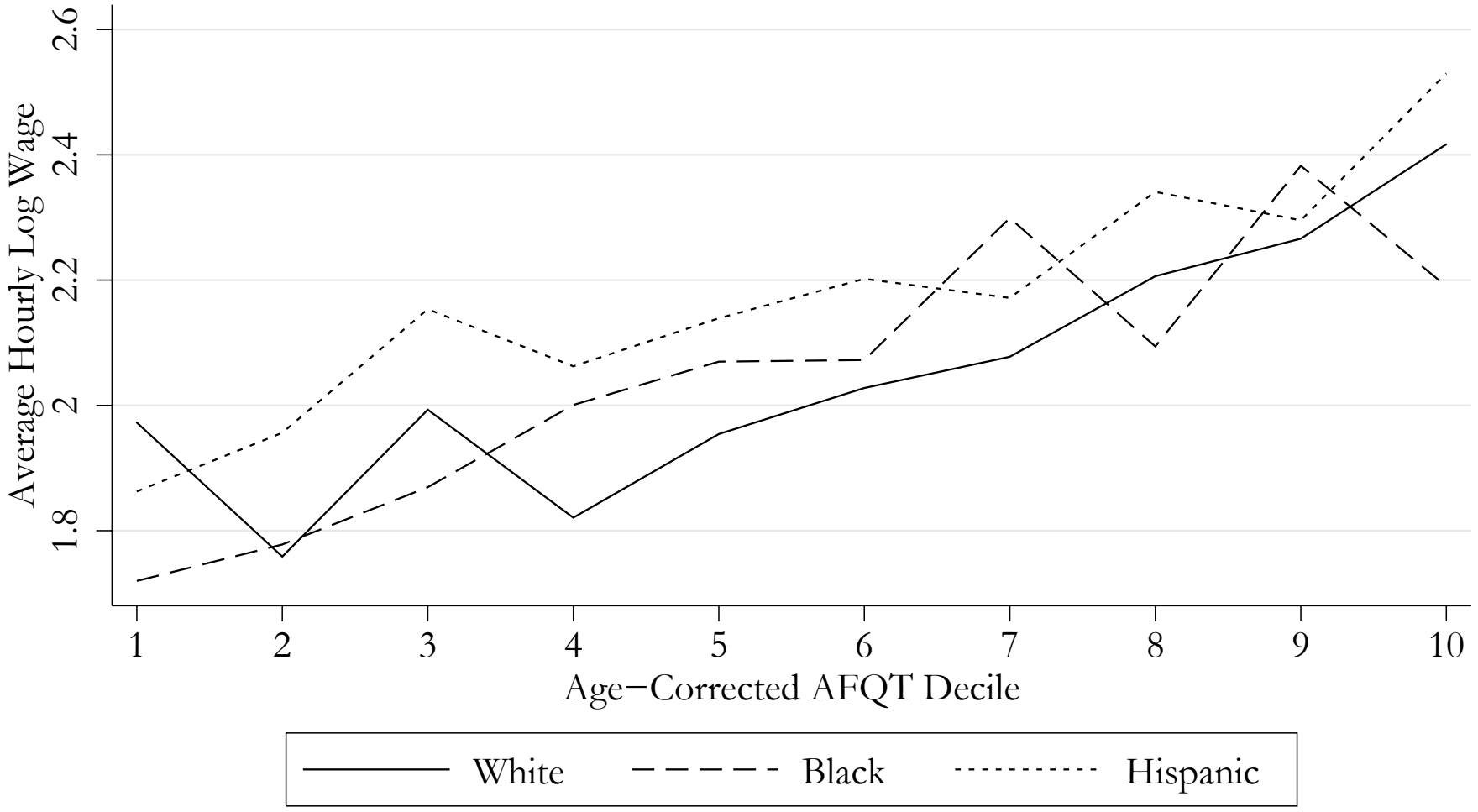


Figure 22
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1991

NLSY79 Females

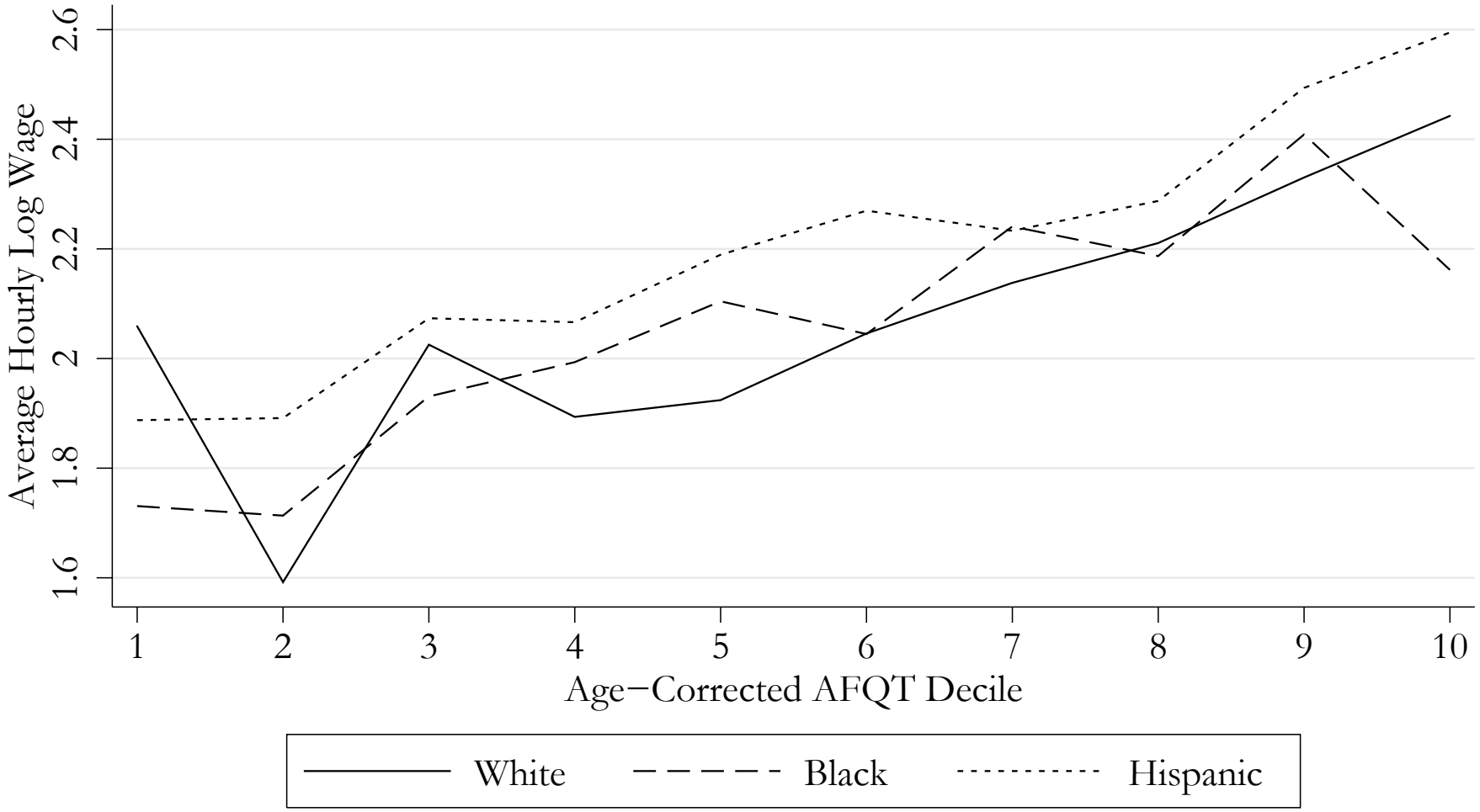


Figure 23
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1992

NLSY79 Females

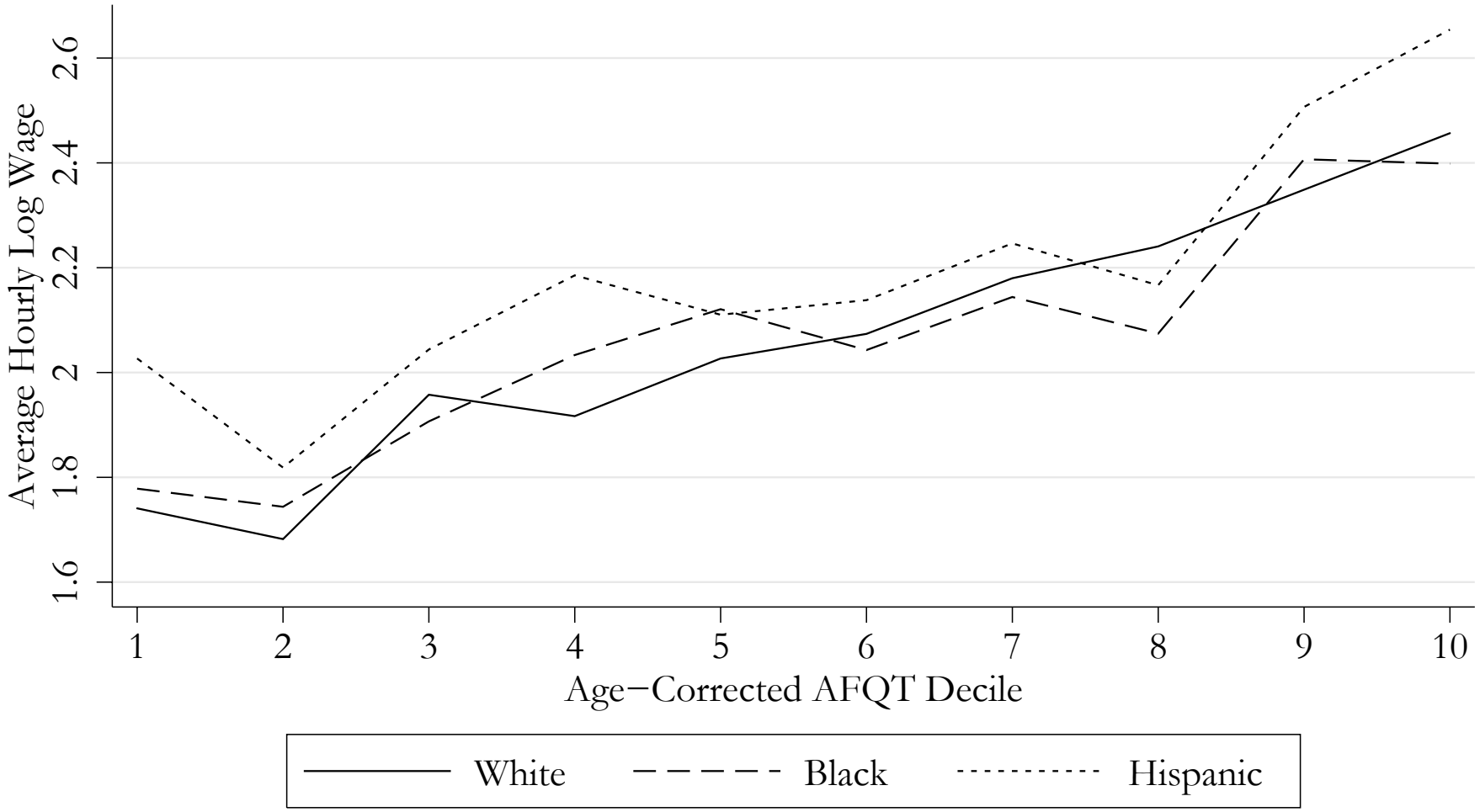


Figure 24
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1993

NLSY79 Females

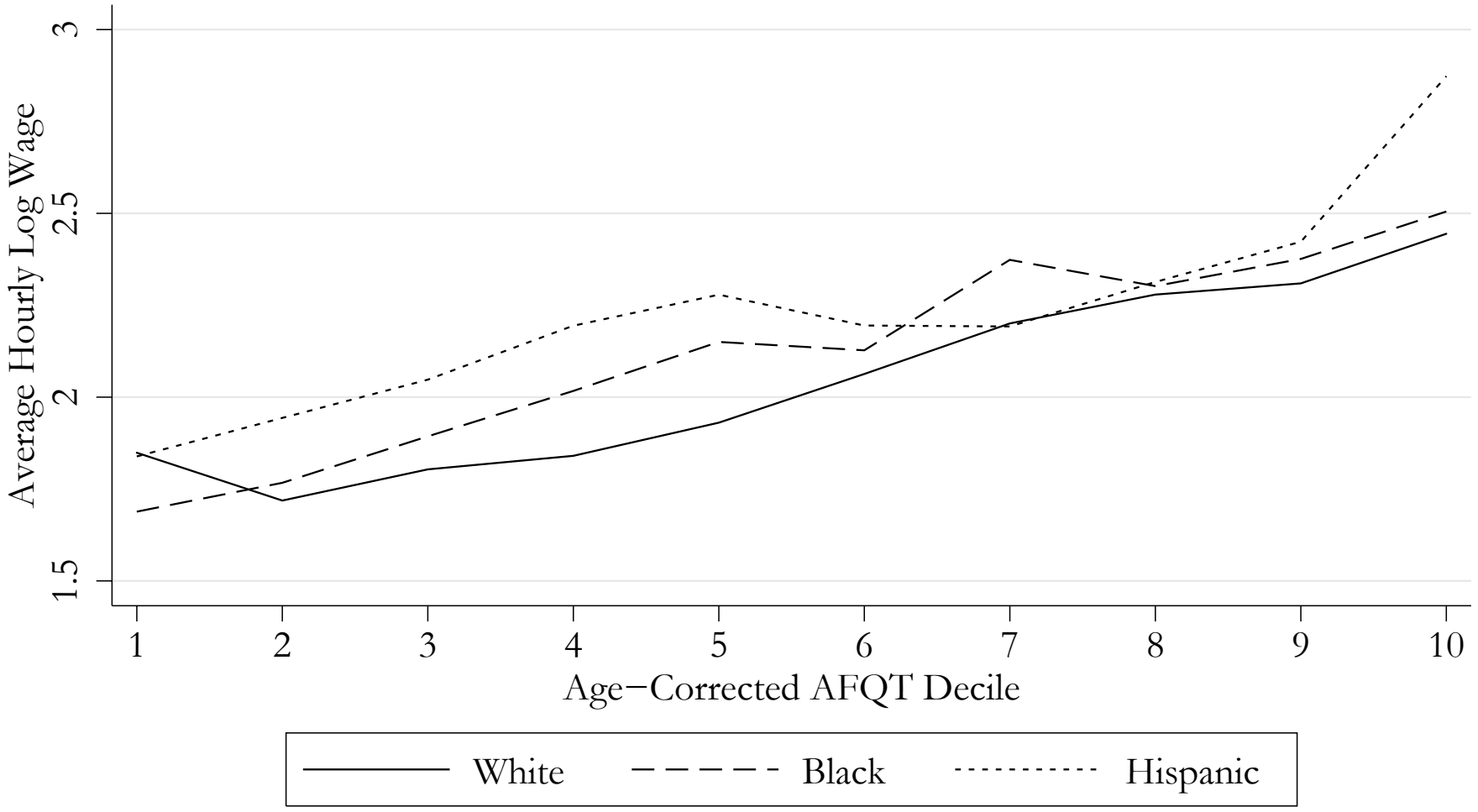


Figure 25
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1994

NLSY79 Females

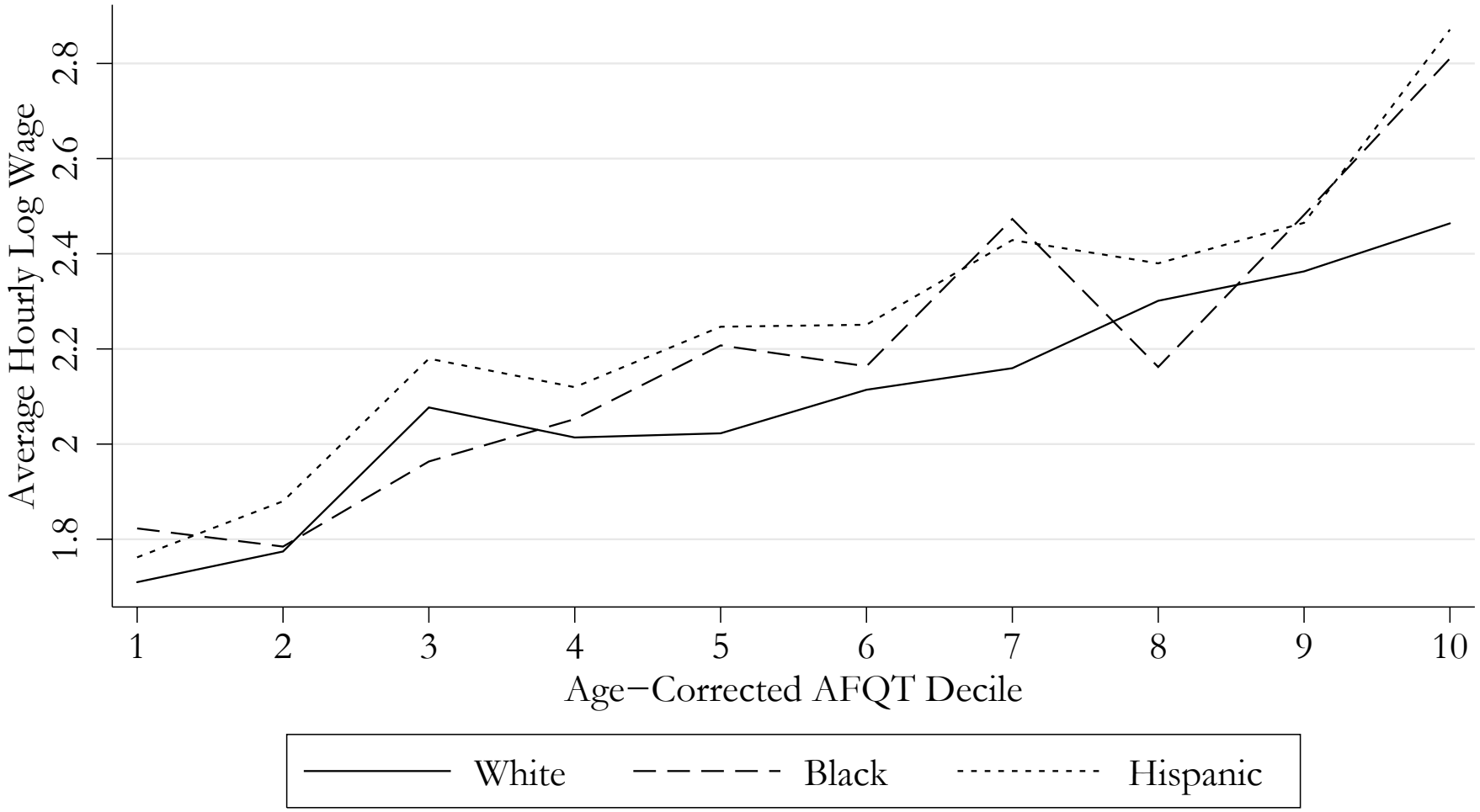


Figure 26
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1996

NLSY79 Females

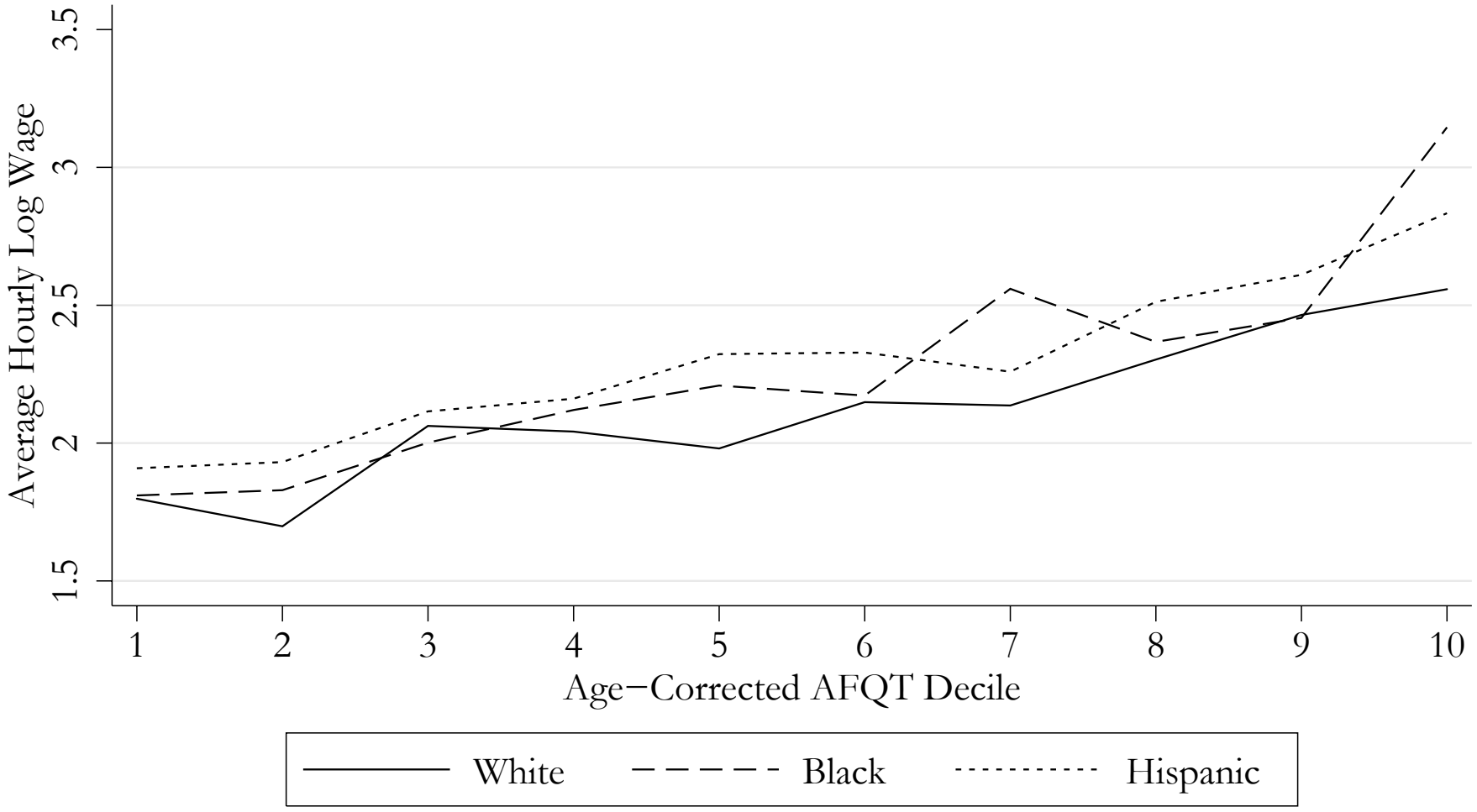


Figure 27
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 1998

NLSY79 Females

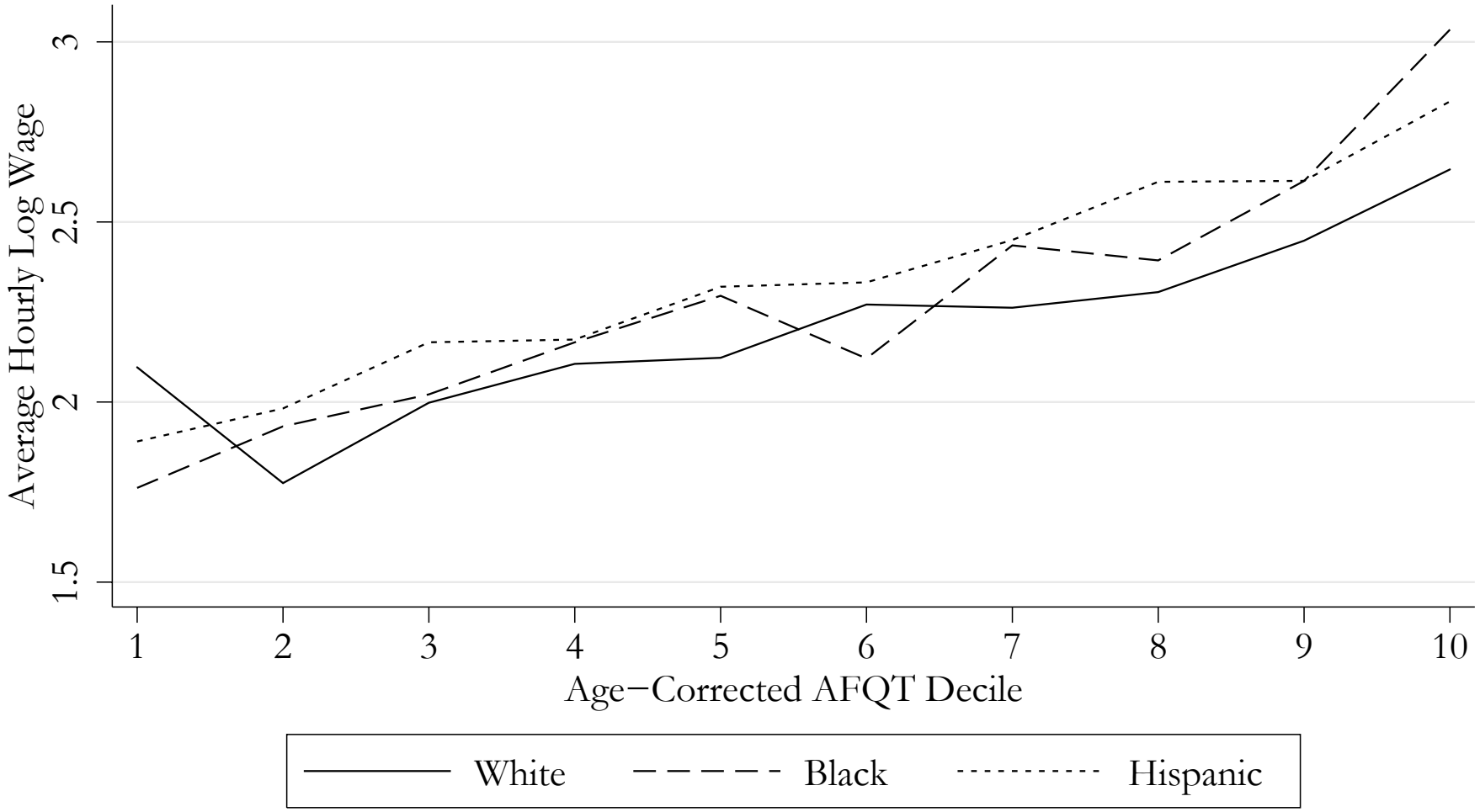


Figure 28
Mean Hourly Log Wage by Age−Corrected AFQT Decile and Race in 2000

NLSY79 Females

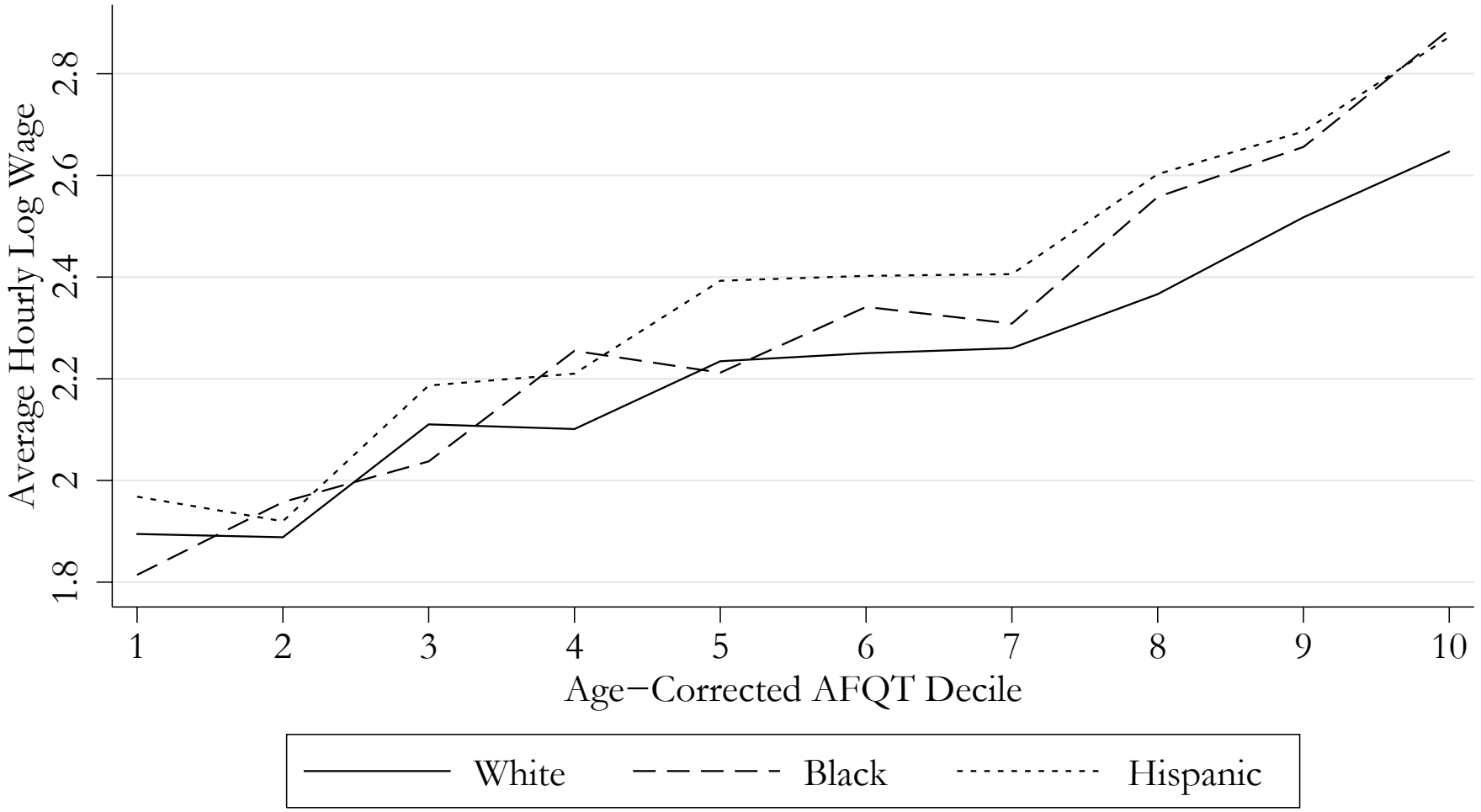


Table 1A
Black-White and the Hispanic-White Percentile PIAT Math Score Gap Adjusted for the Effect of Family Background Characteristics by Age
CNLSY Males

			Adjusted by Permanent Family Income, Mother Age-Corrected AFQT and Education, and:				
Age	Gap	Race Dummies	Home Score	Cognitive Stimulation	Emotional Stimulation	Cog. + Emo. Stimulation	Reading Dummies*
5-6	**Black-White**	-17.51	-6.41	-8.15	-7.13	-6.48	-8.71
	Std. Err.	(1.36)	(1.67)	(1.68)	(1.73)	(1.75)	(2.13)
	Hispanic-White	-15.65	-6.09	-6.65	-6.71	-6.25	-6.80
	Std. Err.	(1.50)	(1.66)	(1.71)	(1.71)	(1.74)	(2.12)
	N	2299	2127	2023	2009	1948	1406
7-8	**Black-White**	-17.97	-5.49	-6.50	-6.59	-6.10	-4.36
	Std. Err.	(1.18)	(1.42)	(1.43)	(1.48)	(1.50)	(1.93)
	Hispanic-White	-14.10	-2.74	-2.92	-3.62	-3.07	0.61
	Std. Err.	(1.34)	(1.45)	(1.47)	(1.49)	(1.51)	(1.99)
	N	2943	2774	2645	2572	2487	1400
9-10	**Black-White**	-18.99	-6.83	-7.14	-7.71	-6.97	-
	Std. Err.	(1.20)	(1.44)	(1.45)	(1.51)	(1.53)	-
	Hispanic-White	-15.21	-4.35	-4.49	-5.54	-4.59	-
	Std. Err.	(1.34)	(1.45)	(1.48)	(1.52)	(1.53)	-
	N	2719	2552	2440	2323	2264	-
11-12	**Black-White**	-22.36	-9.60	-10.31	-10.60	-10.28	-
	Std. Err.	(1.27)	(1.46)	(1.47)	(1.57)	(1.57)	-
	Hispanic-White	-15.77	-4.64	-4.50	-5.63	-4.81	-
	Std. Err.	(1.44)	(1.51)	(1.54)	(1.59)	(1.61)	-
	N	2385	2256	2187	2051	2010	-
13-14	**Black-White**	-22.36	-11.03	-11.00	-10.37	-9.96	-
	Std. Err.	(1.43)	(1.67)	(1.68)	(1.78)	(1.80)	-
	Hispanic-White	-15.67	-4.18	-4.23	-3.87	-3.69	-
	Std. Err.	(1.63)	(1.73)	(1.76)	(1.84)	(1.86)	-
	N	1891	1764	1701	1570	1535	-

Permanent income is constructed by taking the average of annual family income discounted to child's age 0 using a 10% discount rate. Age-corrected AFQT is the standardized residual from the regression of the AFQT score on age at the time of the test dummy variables. Home score is an index of quality of the child's home environment. It is the combination of the indices measuring cognitive and emotional stimulation. Reading dummies indicate how often a mother reads to her child.

* Frequency of reading variable was only available until age 9.

Table 1B
Expected Percentile PIAT Math Score Adjusted for the Effect of Family Background Characteristics by Age
CNLSY Females

			Adjusted by Permanent Family Income, Mother Age-Corrected AFQT and Education, and:				
Age	Race	Race Dummies	Home Score	Cognitive Stimulation	Emotional Stimulation	Cog. + Emo. Stimulation	Reading Dummies*
5-6	**Black-White**	-14.41	-4.19	-5.27	-3.71	-2.99	-4.01
	Std. Err.	(1.38)	(1.70)	(1.73)	(1.76)	(1.80)	(2.11)
	Hispanic-White	-13.61	-4.89	-4.92	-5.52	-5.39	-3.25
	Std. Err.	(1.58)	(1.74)	(1.80)	(1.79)	(1.83)	(2.20)
	N	2243	2073	1981	1957	1893	1375
7-8	**Black-White**	-15.80	-4.16	-4.76	-4.98	-4.41	-5.65
	Std. Err.	(1.20)	(1.47)	(1.48)	(1.52)	(1.54)	(1.95)
	Hispanic-White	-13.55	-3.82	-4.30	-4.02	-3.83	-3.79
	Std. Err.	(1.40)	(1.54)	(1.58)	(1.59)	(1.62)	(2.10)
	N	2844	2651	2526	2482	2398	1356
9-10	**Black-White**	-15.90	-2.71	-3.37	-3.33	-2.93	-
	Std. Err.	(1.21)	(1.44)	(1.45)	(1.52)	(1.53)	-
	Hispanic-White	-13.09	-2.37	-1.84	-2.60	-1.42	-
	Std. Err.	(1.43)	(1.53)	(1.57)	(1.59)	(1.61)	-
	N	2660	2474	2350	2292	2222	-
11-12	**Black-White**	-17.61	-4.83	-5.39	-6.90	-6.20	-
	Std. Err.	(1.30)	(1.53)	(1.52)	(1.59)	(1.60)	-
	Hispanic-White	-15.69	-4.45	-4.07	-4.62	-3.71	-
	Std. Err.	(1.53)	(1.64)	(1.65)	(1.70)	(1.71)	-
	N	2349	2202	2111	2010	1953	-
13-14	**Black-White**	-20.71	-6.47	-6.67	-6.82	-6.48	-
	Std. Err.	(1.42)	(1.63)	(1.63)	(1.76)	(1.77)	-
	Hispanic-White	-15.46	-4.20	-4.08	-3.76	-3.28	-
	Std. Err.	(1.70)	(1.78)	(1.80)	(1.88)	(1.89)	-
	N	1888	1765	1703	1559	1524	-

Permanent income is constructed by taking the average of annual family income discounted to child's age 0 using a 10% discount rate. Age-corrected AFQT is the standardized residual from the regression of the raw AFQT score on age at the time of the test dummy variables. Home score is an index of quality of the child's home environment. It is the combination of the indices measuring cognitive and emotional stimulation. Reading dummies indicate how often a mother reads to her child.

* Frequency of reading variable was only available until age 9.

Table 2A
Change in the Black-White and Hispanic-White Noncognitive Score Gaps Adjusted For Background Variables by Age
CNLSY79 Males

			Specification							
Score	Gap	Age	Race Dummies	Add Family Income	Add Mother's Education	Add Mother's Adjusted AFQT	Add Raw Home Score	Add South and Urban	Add Grandparent's Education	Add Broken Home
Percentile	Black-White	**4 - 5**	**5.52**	**2.96**	**2.63**	**2.31**	**-2.81**	**-3.51**	**-3.52**	**-2.29**
Antisocial			(1.95)	(1.98)	(1.96)	(2.32)	(2.38)	(2.47)	(2.80)	(3.15)
Behavior	Hispanic-White		**5.49**	**3.53**	**1.57**	**1.12**	**-1.60**	**-2.59**	**-2.19**	**-1.31**
Score			(2.04)	(2.05)	(2.08)	(2.30)	(2.32)	(2.40)	(2.98)	(3.19)
	N		1526	1512	1512	1449	1396	1362	1145	1015
	Black-White	**6 - 7**	**13.18**	**10.18**	**9.92**	**7.75**	**4.58**	**4.42**	**4.77**	**4.52**
			(1.91)	(1.95)	(1.94)	(2.28)	(2.34)	(2.46)	(2.77)	(3.10)
	Hispanic-White		**7.30**	**5.28**	**3.41**	**1.46**	**0.10**	**-0.39**	**-1.30**	**-0.61**
			(2.06)	(2.07)	(2.09)	(2.29)	(2.31)	(2.39)	(2.92)	(3.03)
	N		1541	1530	1529	1477	1428	1390	1158	1026
	Black-White	**8 - 9**	**14.95**	**12.59**	**12.25**	**11.16**	**5.59**	**3.79**	**0.91**	**0.17**
			(1.90)	(1.95)	(1.94)	(2.25)	(2.28)	(2.39)	(2.73)	(2.99)
	Hispanic-White		**4.43**	**2.59**	**1.06**	**0.40**	**-1.51**	**-3.55**	**-2.74**	**-3.66**
			(2.19)	(2.20)	(2.21)	(2.38)	(2.35)	(2.44)	(2.92)	(3.06)
	N		1443	1434	1433	1388	1337	1314	1084	963
	Black-White	**10 - 11**	**11.94**	**8.11**	**8.09**	**5.86**	**4.93**	**3.84**	**3.97**	**-0.10**
			(2.09)	(2.15)	(2.12)	(2.46)	(3.42)	(3.57)	(4.01)	(4.51)
	Hispanic-White		**5.32**	**2.49**	**0.28**	**-0.75**	**-0.98**	**-1.53**	**-0.40**	**0.64**
			(2.27)	(2.28)	(2.29)	(2.51)	(3.48)	(3.60)	(4.37)	(4.54)
	N		1291	1284	1283	1228	630	622	520	463
	Black-White	**12 - 13**	**11.94**	**9.24**	**9.28**	**9.67**	**5.97**	**5.01**	**4.90**	**2.85**
			(2.24)	(2.30)	(2.28)	(2.60)	(2.74)	(2.84)	(3.27)	(3.56)
	Hispanic-White		**4.49**	**2.97**	**1.30**	**1.69**	**-0.04**	**-0.42**	**0.59**	**0.06**
			(2.43)	(2.43)	(2.46)	(2.69)	(2.74)	(2.80)	(3.35)	(3.44)
	N		1065	1061	1060	1018	962	954	765	678
	Black-White	**14**	**11.39**	**6.58**	**6.54**	**2.05**	**0.37**	**-1.08**	**-0.50**	**-4.07**
			(3.68)	(3.82)	(3.82)	(4.49)	(4.57)	(4.73)	(5.48)	(6.03)
	Hispanic-White		**5.25**	**2.11**	**0.79**	**-0.23**	**-0.73**	**-0.13**	**-0.02**	**1.85**
			(4.00)	(4.02)	(4.08)	(4.53)	(4.58)	(4.70)	(5.81)	(6.21)
	N		403	403	402	380	362	359	300	257

Mothers were asked 28 age-specific questions about frequency, range and type of specific behavior problems that children age four and over may have exhibited in the previous three months. Factor analysis was used to determine six clusters of questions. This test is one such cluster. The responses for each cluster were dichotomized and summed to produce a raw score. The percentile score was then calculated separately for each sex at each age from the raw score. A higher percentile score indicates a higher incidence of problems.

Table 2B
Change in the Black-White and Hispanic-White Noncognitive Score Gaps Adjusted For Background Variables by Age
CNLSY79 Females

			Specification							
Score	Gap	Age	Race Dummies	Add Family Income	Add Mother's Education	Add Mother's Adjusted AFQT	Add Raw Home Score	Add South and Urban	Add Grandparent's Education	Add Broken Home
Percentile	Black-White	**4 - 5**	**11.64**	**9.48**	**9.09**	**8.52**	**3.10**	**2.83**	**3.87**	**4.90**
Antisocial			(1.95)	(2.01)	(2.01)	(2.41)	(2.49)	(2.58)	(2.95)	(3.25)
Behavior	Hispanic-White		**7.04**	**5.26**	**3.72**	**3.22**	**1.71**	**1.94**	**6.20**	**6.08**
Score			(2.14)	(2.17)	(2.23)	(2.47)	(2.47)	(2.57)	(3.09)	(3.20)
	N		1491	1477	1474	1406	1363	1335	1084	960
	Black-White	**6 - 7**	**13.02**	**10.89**	**10.30**	**9.44**	**5.56**	**5.92**	**5.00**	**4.07**
			(1.94)	(2.01)	(2.00)	(2.31)	(2.37)	(2.46)	(2.86)	(3.20)
	Hispanic-White		**3.00**	**1.88**	**-0.11**	**-1.53**	**-1.84**	**-2.05**	**-2.66**	**-2.77**
			(2.18)	(2.20)	(2.24)	(2.45)	(2.47)	(2.57)	(3.03)	(3.19)
	N		1480	1474	1473	1413	1347	1317	1055	922
	Black-White	**8 - 9**	**11.81**	**8.94**	**8.67**	**7.87**	**2.71**	**3.88**	**2.75**	**4.16**
			(1.98)	(2.03)	(2.03)	(2.40)	(2.46)	(2.51)	(2.88)	(3.24)
	Hispanic-White		**4.95**	**3.41**	**2.01**	**1.14**	**-0.56**	**0.23**	**0.00**	**0.79**
			(2.28)	(2.28)	(2.34)	(2.53)	(2.53)	(2.61)	(3.03)	(3.17)
	N		1444	1436	1435	1381	1330	1309	1043	911
	Black-White	**10 - 11**	**15.33**	**12.52**	**12.44**	**7.95**	**0.51**	**0.67**	**-2.40**	**-5.56**
			(2.12)	(2.17)	(2.16)	(2.53)	(3.76)	(3.86)	(4.52)	(4.82)
	Hispanic-White		**3.64**	**1.94**	**-0.02**	**-2.35**	**-6.62**	**-6.84**	**-6.31**	**-4.69**
			(2.54)	(2.53)	(2.59)	(2.78)	(3.92)	(4.00)	(4.79)	(5.02)
	N		1240	1239	1239	1187	600	597	464	417
	Black-White	**12 - 13**	**10.72**	**8.36**	**8.34**	**4.05**	**0.73**	**0.01**	**1.55**	**3.69**
			(2.37)	(2.42)	(2.41)	(2.84)	(2.91)	(3.00)	(3.60)	(3.88)
	Hispanic-White		**4.77**	**3.10**	**1.66**	**-0.54**	**-0.63**	**-2.16**	**-1.26**	**-1.42**
			(2.72)	(2.73)	(2.79)	(3.08)	(3.10)	(3.20)	(4.00)	(4.17)
	N		1025	1025	1025	975	935	927	700	622
	Black-White	**14**	**6.31**	**3.75**	**3.76**	**1.18**	**-2.30**	**-3.02**	**-4.15**	**-2.56**
			(3.78)	(3.83)	(3.81)	(4.56)	(4.67)	(4.86)	(5.59)	(6.06)
	Hispanic-White		**3.99**	**2.46**	**0.77**	**-1.03**	**-4.20**	**-4.69**	**-14.12**	**-16.06**
			(4.70)	(4.72)	(4.77)	(5.24)	(5.31)	(5.41)	(6.71)	(6.86)
	N		405	404	404	386	369	368	276	247

Mothers were asked 28 age-specific questions about frequency, range and type of specific behavior problems that children age four and over may have exhibited in the previous three months. Factor analysis was used to determine six clusters of questions. This test is one such cluster. The responses for each cluster were dichotomized and summed to produce a raw score. The percentile score was then calculated separately for each sex at each age from the raw score. A higher percentile score indicates a higher incidence of problems.

Table 3. Juvenile and parental expectations about future youth behavior at age 16-17 by race and sex, NLSY97 Round 1

Behavior	Blacks	Hispanics	Whites	Males	Females
	A . Juvenile expectations about behavior at age 17-18				
Enrolled in school	91.75	88.35	93.72	91.67	92.55
	(22.79)	(26.33)	(21.31)	(23.32)	(22.30)
Work for pay over 20 hours per week and be enrolled	62.77	60.00	59.11	60.84	58.86
	(32.44)	(31.02)	(33.43)	(32.00)	(33.65)
Work for pay over 20 hours per week and not be enrolled	77.01	76.39	83.11	80.09	79.78
	(31.44)	(30.18)	(27.58)	(28.88)	(29.95)
Pregnant	7.99	7.78	4.68	0.00	6.32
	(20.43)	(17.64)	(12.99)	0.00	(16.53)
Impregnate someone	13.52	12.33	6.27	9.46	0.00
	(21.75)	(20.65)	(14.77)	(18.39)	0.00
Seriously drunk at least once	11.64	20.37	24.12	21.55	18.00
	(23.77)	(29.78)	(33.81)	(32.06)	(29.44)
Victim of violent crime	16.16	16.11	13.36	15.40	13.97
	(22.99)	(21.92)	(18.89)	(21.44)	(20.04)
Arrested	12.14	11.43	8.74	13.73	6.65
	(20.55)	(19.49)	(16.08)	(20.69)	(14.33)
Dead from any cause	22.53	19.02	16.56	17.55	19.75
	(25.35)	(23.00)	(20.36)	(21.92)	(23.03)
	B. Juvenile expectations about behavior at age 20				
Receive a high school diploma	92.99	88.92	95.44	92.33	94.57
	(19.45)	(23.64)	(15.57)	(19.63)	(17.58)
Serve time in jail or prison	5.03	7.53	4.54	7.18	3.40
	(13.00)	(16.35)	(11.76)	(15.20)	(10.41)
Mother or father a baby	21.20	21.00	14.86	19.22	16.28
	(29.34)	(27.69)	(23.14)	(25.63)	(26.30)
Dead from any cause	22.27	21.48	19.01	19.60	21.08
	(24.73)	(23.60)	(20.72)	(22.20)	(22.75)
	C. Juvenile expectations about behavior at age 30				
Earn a 4-year college degree	74.22	66.93	73.75	68.75	76.90
	(31.44)	(31.59)	(31.50)	(32.02)	(30.37)
Work for pay over 20 hours per week	90.48	89.72	94.39	92.81	91.85
	(20.05)	(19.23)	(13.71)	(16.05)	(17.93)
	D. Parental expectations about youth behavior at age 17-18				
Enrolled in School	90.68	89.39	94.03	90.80	93.64
	(23.70)	(25.08)	(20.07)	(23.80)	(20.48)
Work for pay over 20 hours per week and be enrolled	51.42	50.52	42.65	47.14	45.09
	(34.84)	(37.10)	(38.16)	(37.05)	(37.54)
	E. Parental expectations about youth behavior at age 20				
Receive a high school diploma	91.51	91.94	96.19	93.12	95.13
	(21.14)	(19.97)	(15.10)	(19.43)	(16.31)
Serve time in jail or prison	4.77	3.87	2.62	4.84	2.06
	(14.35)	(12.99)	(9.39)	(13.93)	(8.76)
Mother or father a baby	17.55	19.32	12.58	15.54	14.94
	(28.84)	(27.81)	(21.55)	(24.66)	(25.68)
	F. Parental expectations about youth behavior at age 30				
Earn a 4-year college degree	68.29	67.15	69.85	65.68	72.77
	(33.44)	(32.35)	(32.29)	(34.03)	(30.63)
Work for pay over 20 hours per week	93.22	92.89	94.95	95.87	92.18
	(16.17)	(17.82)	(13.30)	(12.93)	(16.96)

In round 1 of NLSY97 respondents who were born in 1980 or 1981 and their parents were surveyed on their beliefs about the respondents' future. Asked to assess the probability that a given event or behavior would occur by certain age, they were instructed to use a scale from 0 (impossible) to 100 (certain). The numbers in the table represent the average estimated probability of the event within that group. Standard deviations are displayed in parentheses below the means.

Table 4. Pooled Log Wage Regressions for 1990-2000, NLSY Females

	Year							
	1990	1991	1992	1993	1994	1996	1998	2000
Age-Adjusted AFQT	0.2241**	0.2266**	0.2383**	0.2577**	0.2253**	0.2655**	0.2353**	0.2400**
	(0.0211)	(0.0223)	(0.0210)	(0.0233)	(0.0239)	(0.0228)	(0.0233)	(0.0244)
Black	0.0572	0.035	0.0161	0.1054**	0.1005**	0.1489**	0.0836*	0.0777*
	(0.0340)	(0.0363)	(0.0342)	(0.0382)	(0.0385)	(0.0379)	(0.0376)	(0.0394)
Interaction of Black and AFQT	0.0212	0.0267	-0.0106	0.049	0.0840*	0.0754	0.1039*	0.0817
	(0.0375)	(0.0405)	(0.0388)	(0.0426)	(0.0427)	(0.0415)	(0.0409)	(0.0423)
Hispanic	0.1489**	0.1484**	0.1142**	0.1880**	0.1577**	0.1801**	0.1358**	0.1382**
	(0.0357)	(0.0384)	(0.0361)	(0.0395)	(0.0409)	(0.0399)	(0.0396)	(0.0414)
Interaction of Hispanic and AFQT	-0.0496	-0.0051	-0.0401	-0.0162	0.0564	0.0071	0.0523	0.0484
	(0.0393)	(0.0428)	(0.0405)	(0.0439)	(0.0455)	(0.0450)	(0.0442)	(0.0451)
Constant	2.0237**	2.0511**	2.0655**	2.0369**	2.1006**	2.1134**	2.1967**	2.2248**
	(0.0211)	(0.0225)	(0.0213)	(0.0236)	(0.0241)	(0.0229)	(0.0232)	(0.0241)
Observations	1325	1299	1278	1281	1288	1344	1329	1276
R-squared	0.16	0.16	0.17	0.17	0.16	0.18	0.19	0.18
F statistic	1.290	0.269	0.491	0.934	2.174	1.713	3.330	1.988
Significance Level	0.276	0.764	0.612	0.393	0.114	0.181	0.036	0.137

Standard errors in parentheses: * indicates significant at 5%; ** indicates significant at 1%.

Age-corrected AFQT is the standardized residual from the regression of the AFQT score on age at the time of the test dummy variables. AFQT is a subset of 4 out of 10 ASVAB tests used by the military for enlistment screening and job assignment. It is the summed score from the word knowledge, paragraph comprehension, mathematics knowledge, and arithmetic reasoning ASVAB tests. All wages are in 1993 dollars. The coefficients on the AFQT variables represent the effect of a one standard deviation increase in the score on the log hourly wage. Since the wage is measured in log points, the gaps for blacks and hispanics correspond approximately to percentage point differences relative to the white mean; that is, the black-white gap of -.25 in 1990 corresponds to 25% lower wages for blacks in that year. The joint null hypothesis for the Wald F test was that all of the race-AFQT interaction coefficients are zero.