Online Appendix

Preschool Television Viewing and Adolescent Test Scores Historical Evidence from the Coleman Study

Matthew Gentzkow Jesse M. Shapiro
University of Chicago and NBER

May 2007

1 Evidence from the U.S. Census

Our labor market data come from the Integrated Public Use Microdata Series (Ruggles et al. 2004). We extracted information on schooling attainment for individuals ages 25 and up born in 1948, 1951, and 1954 from the 1970, 1980, 1990, and 2000 1% samples of the Census. We excluded individuals still attending school or in group housing.

Although the Census identifies sample individuals' metropolitan area of residence, it does not identify the metropolitan area in which an individual was born or raised. The Census does, however, classify individuals by state of birth. Since we are interested in the effects of childhood television exposure, we will use state of birth to figure out the year of television introduction relevant to a given sample individual. For each state, we compute the year in which the first county in the state received television. Then we follow our procedures from the previous section and calculate for each individual the expected number of years from ages 2-6 in which he or she lived in a state where television was available. Although the coarseness of our geographic identifiers makes this a noisy exercise, it may provide a glimpse of the long-run labor-market consequences of childhood television exposure.

Table 1 presents the results of 2SLS models of schooling completion and labor market earnings as a function of expected years of television exposure. We treat years of television exposure as endogenous, and use as instruments the interactions between our three categories of television introduction years with dummies for birth cohort. In parallel with our study of test scores, all specifications include fixed effects for birth cohort, Census year, and state of birth, as well as interactions between cohort dummies and log(state income) and log(state population). Standard errors are adjusted for clustering on state of birth.

Column (1) presents our estimates of the effect of television exposure on the probability of high school completion. We focus on the 1948, 1951, and 1954 birth cohorts, since this group most closely resembles the sample we studied in the previous section. We find a small and statistically insignificant negative effect: an additional year of television exposure reduces the rate of high school completion by 0.2 percentage points.

In columns (2) through (4) we turn to effects on labor market earnings, using the sample of individuals with positive reported earnings. In column (2) we include all individuals in the relevant cohorts. In column (3) we restrict attention to prime-age white males, in order to minimize the effect of selection into the labor market. In column (4) we present results for the 1930-1941 birth cohorts, which allows us to take a first look at the effect of television exposure for older children (ages 7-18). In all cases, we find no evidence of a significant effect of television exposure. In the first two columns, the coefficients are negative and insignificant. In the final column, the coefficient is positive and insignificant, providing limited evidence that our failure to identify negative effects of television is not an artifact of our focus on exposure at young ages.

Online Appendix Table 1 *Effect of childhood television exposure on schooling attainment and adult labor market earnings*

	(1)	(2)	(3)	(4)
Dependent variable	Completed H.S.	log(wage income)	log(wage income)	log(wage income)
Cohorts	1948, 1951, 1954	1948, 1951, 1954	1948, 1951, 1954	1930-1941
Sample	All	wage income > 0	Prime-age white males with wage income > 0	Prime-age white males with wage income > 0
Years of television exposure, ages 2-6	0.0031	-0.0098	-0.0058	
	(0.0129)	(0.0357)	(0.0383)	
Years of television exposure, ages 7-18				0.0251
				(0.0282)
Number of obs.	285650	226649	107965	284551
Number of states	48	48	48	48

Source: Authors' calculations based on IPUMS data (Ruggles et al. 2004).
Notes: Data from Ruggles et al. (2004). Estimates are from 2SLS models with interactions between birth year and category of television introduction year used as instruments for years of television exposure. Standard errors in parentheses are adjusted for clustering on state of birth. All specifications include fixed effects for state of birth, year, and year of birth, as well as dummies for year of birth interacted with log(state income) in 1959 and log(state population) in 1960.

Online Appendix Table 2 *Is television introduction correlated with DMA characteristics?*

	Test of joint significance of television variables	
(Dependent variable)	F statistic	(p-value)
1950 DMA characteristics		
Percent high-school graduates	0.13	0.878
Median age	0.38	0.682
Percent non-white	1.05	0.352
1950-1960 change in DMA characteristics		
Percent high-school graduates	0.33	0.723
Median age	1.44	0.240
Percent non-white	1.16	0.315
Log population	0.34	0.712
Log median income	0.19	0.831

Source: Authors' calculations based on Coleman Study data.
Notes: Each row presents results from a regression of the dependent variable listed on dummies for middle and late introduction of television, log population, and log income. The figures are for a test of the joint significance of the two television dummies. The regressions include all of the DMAs represented in the Coleman data except Honolulu, HI, for which the complete set of 1950 demographics is not available.

Online Appendix Table 3 *Is predicted television exposure correlated with teacher characteristics?*

(Teacher characteristics)	Predicted years of television exposure
Male	-0.2581
	(0.4885)
White	0.3625
	(0.3528)
Age	0.0074
	(0.0212)
Father's education (index)	-0.0192
	(0.0914)
Mother's education (index)	-0.0434
	(0.1122)
Has Master's degree	0.1907
	(0.4489)
Years of classroom experience	-0.0296
	(0.0267)
Salary ($1000)	0.1601
	(0.1313)
Hours per day spent in classroom	-0.1440
	(0.1566)
Class size	-0.0037
	(0.0178)
Number of different subjects taught	0.1293
	(0.0621)
Verbal test score (standardized)	-0.1845
	(0.2022)
$F\,(12, 135)$	1.59
$(p - value)$	(0.1109)
Number of observations	252
Number of DMAs	85

Source: Authors' calculations based on Coleman Study data.

Notes: Standard errors in parentheses are adjusted for clustering on DMA. Unit of observation is the DMA-grade. All regressions include fixed effects for grade and DMA and interactions between grade and log(DMA population) in 1960 and log(DMA total income) in 1959. Characteristics refer to average characteristics of all teachers in the DMA-grade category. Dummies are included to indicate missing values for teacher characteristics.

Online Appendix Table 4 *Is television introduction correlated with trends in school quality?*

	Year state first received television
Change in log(average relative teacher salary):	
1920 cohort - 1930 cohort	9.3809
	(4.1332)
1930 cohort - 1940 cohort	-0.0906
	(6.3179)
Change in log(average number of school days per year):	
1920 cohort - 1930 cohort	-18.2696
	(14.0157)
1930 cohort - 1940 cohort	40.8373
	(26.3258)
Change in log(average teacher-student ratio):	
1920 cohort - 1930 cohort	-1.6722
	(5.2949)
1930 cohort - 1940 cohort	8.9435
	(6.5421)
N	48
$F(6, 39)$	1.93
$p - value$	0.1006

Source: Authors' calculations based on school quality data from Card and Krueger (1992), as coded by Berry (2004).
Notes: The unit of observation is U.S. state (excluding Alaska and Hawaii). Dependent variable is the first year in which any county in the state could receive a television broadcast.

Online Appendix Table 5 *Sample splits by place of residence in childhood*

	Standardized average test score	Standardized component: Math	Spatial reasoning	Verbal	Reading	General knowledge
Students who report spending most of their lives in this town or elsewhere in state:						
Years of preschool television exposure	0.0227	-0.0239	0.0022	0.0347	0.0578	0.0497
	(0.0277)	(0.0389)	(0.0400)	(0.0265)	(0.0293)	(0.0420)
Number of observations	288828	288828	288828	288828	288828	199494
Number of schools	800	800	800	800	800	705
Number of DMAs	136	136	136	136	136	134
Students who report spending most of their lives in another state or country:						
Years of preschool television exposure	-0.0131	-0.0418	-0.0231	-0.0071	0.0180	0.0640
	(0.0510)	(0.0582)	(0.0470)	(0.0646)	(0.0469)	(0.1191)
Number of observations	47167	47167	47167	47167	47167	22811
Number of schools	782	782	782	782	782	671
Number of DMAs	136	136	136	136	136	134

Source: Authors' calculations based on Coleman Study data.

Notes: Estimates are from 2SLS models with interactions between grade and category of television introduction year used as instruments for years of television exposure. Standard errors in parentheses are adjusted for clustering on DMA. All dependent measures are standardized to have a mean of zero and a standard deviation of unity within each grade. All specifications include fixed effects for school and grade, interactions between grade and log(DMA population) in 1960 and log(DMA total income) in 1959, controls for gender, English spoken at home, father's education, mother's education, race, lives with biological father, lives with biological mother, and separate dummies for whether student's family has a telephone, a record player, a refrigerator, a vacuum cleaner, or a car, and demographic controls interacted with grade dummies. Dummies are included to indicate missing values for demographic controls. General knowledge test scores are only available for students in grades 9 and 12.