THE GRANDCHILDREN OF BROWN: THE LONG LEGACY OF SCHOOL DESEGREGATION

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Abstract:

In the US, there is a high degree of persistence in economic status and health status across generations, particularly in the lower and upper tails of the income distribution. For example, it has been shown that 42 percent of men raised in the bottom quintile of incomes remain there as adults, while only 8 percent of US men at the bottom rise to the top quintile (Jantti et al., 2007). While public policies that promote equalization of educational opportunity have been emphasized as keys to break the intergenerational cycle of poverty, there exists limited causal evidence of the mechanisms that underlie intergenerational immobility. Few studies have attempted to isolate the causal effect of education on the next generation's well-being. This is in part due to formidable empirical challenges that arise from the paucity of large nationally-representative data sets with information both on parental and child outcomes over the life cycle, and the difficult search for a credible identification strategy.

This paper uses the Panel Study of Income Dynamics spanning 5 decades (PSID: 1968-2017) to link three generations of adult outcomes. The analyses exploit the historical period and quasi-random timing of court-ordered school desegregation to quantify the extent to which children's well-being can be improved by increased parental education and document the intergenerational returns to education. The first stage of the analysis (using the "parent sample" that consists of cohorts born between 1950-1970) builds on prior findings that demonstrate for blacks, school desegregation significantly increased educational attainment, with no significant desegregation effects on whites' educational outcomes (Johnson, 2011). The present study provides new evidence on the causal influence of parental education across generations by using the timing of initial court orders and resultant differences in childhood exposure to school desegregation as an instrument for parental education, linked (in the second stage) with their children's subsequent life outcomes (using the "child sample" that consists of cohorts born since 1980). The 2SLS/IV framework and intergenerational research design utilized enables this work to assess the impact of school desegregation on children and their families into the third generation. I find a considerable impact of school desegregation that persists to influence the outcomes of the next generation, including increased math and reading test scores, reduced likelihood of grade repetition, increased likelihood of high school graduation and college attendance, improvements in college quality/selectivity, and increased racial diversity of student body at their selected college. The findings demonstrate that part of the intergenerational transmission of inequality can be attributable to school quality related influences. The results in turn highlight parental education as a causal determinant of generational mobility.

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The Grandchildren of Brown:

Intergenerational Returns to Education

Rucker C. Johnson, UC-Berkeley

Book Chapters:
The Long Legacy of School Desegregation

1. Long-run Impacts of School Desegregation & School Quality on Adult Attainments
2. School Quality & the Long-run Effects of Head Start
3. Who's on the Bus? Schools as a Vehicle to Intergenerational Mobility
4. The Grandchildren of Brown: Intergenerational Returns to Education
5. Educational Consequences of the End of Court-Ordered Desegregation

4 Stages of Analysis

1) How court-ordered school desegregation influenced quantity & quality of educational inputs received by minority children. (Event Study)

2) Effects court-ordered school deseg plans on later adult outcomes;

   Disentangle effects of neighborhood and school quality.

   - Difference-in-Difference
   - Sibling FE

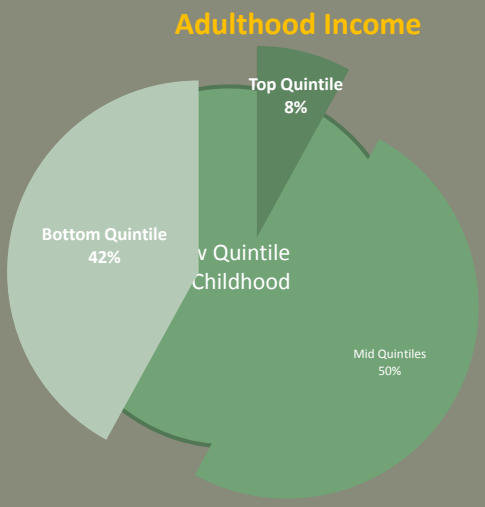
3) Role of childhood factors on racial SES & health disparities in adulthood

4) Intergenerational Returns to Education Policy

Outline of Presentation

- Sample design & content
- Contributions to 3 issues:
  - Long-run effects of desegregation into 3rd generation
  - Intergenerational transmission of well-being
  - Long-run effects of childhood conditions

Who's Moving up? Who's Not?



Jantti et al, 2007

This Paper…

- links three generations of adult outcomes.
  - Via PSID-CDS-TA
- provides new evidence on causal influence of parental educ across generations
  - Via timing of initial court orders
- assesses impact of school desegregation on children & their families into the 3rd generation
  - Via 2SLS/IV framework and intergen research design

Prior Results: Effects of School Desegregation on Educational Attainment, Adult Earnings & Health, and Intergenerational Mobility

- 1st estimates of court-ordered school desegregation impacts on adult earnings, health, & intergenerational mobility
- Use variation in timing of court desegregation orders among districts subject to orders 60s-80s
- Desegregation orders generate significant long-run improvements in adult health for blacks
  - Due in part to improvements in…
    - School quality
    - Racial integration for blacks
    - Increases in education spending

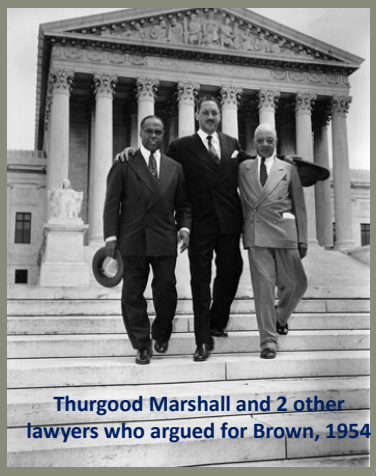
    } which impact socioeconomic mobility prospects

This Paper's Findings

- considerable impact of school deseg persists, influences outcomes next generation
- part of intergenerational transmission attributable to school quality related influences.
- Parental educ as causal determinant of generational mobility

Desegregation: Some History

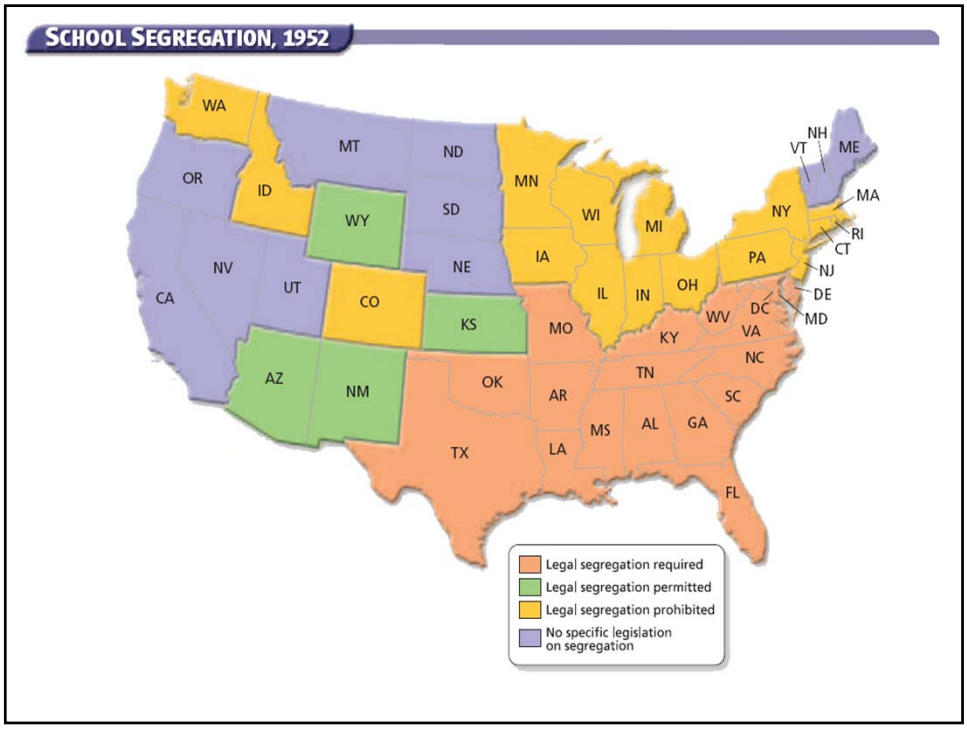
- *Plessy v. Ferguson* (1896): segregated schools were equal
- *Brown v. Board of Education* (1954): segregated schools were unequal

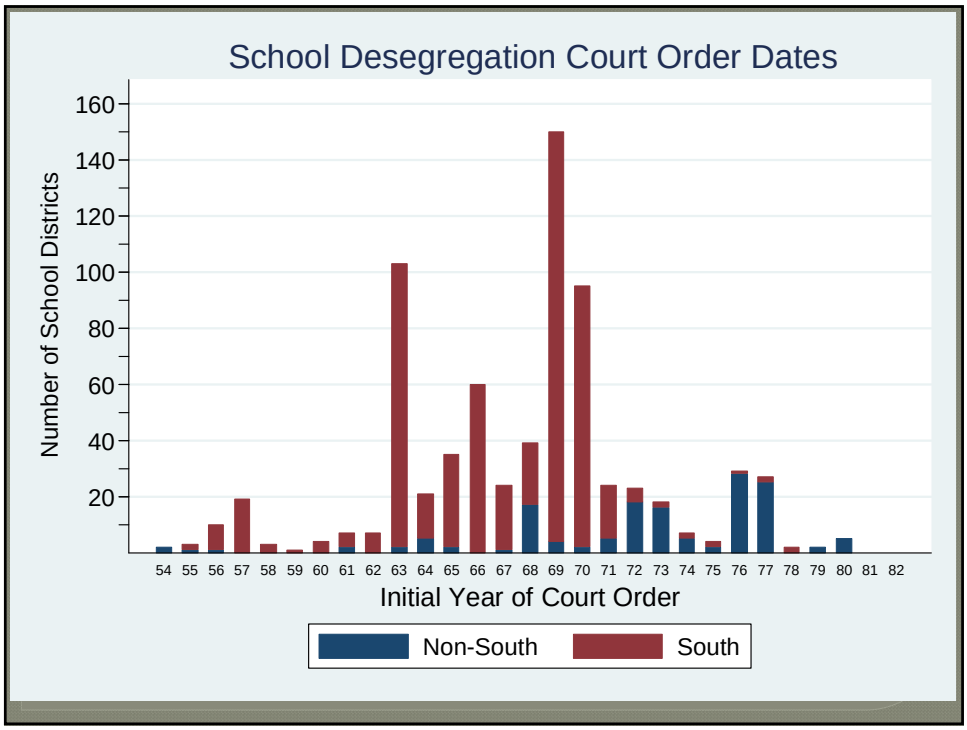


Thurgood Marshall and 2 other lawyers who argued for Brown, 1954

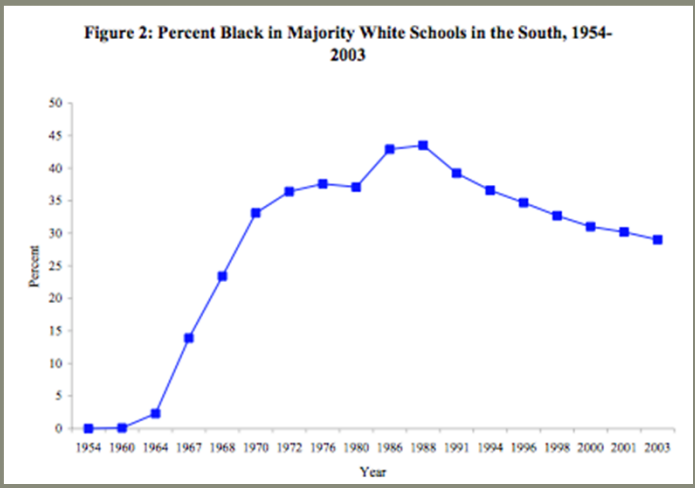
Historical Background

- *Brown v. Board of Education* issued in 1954
- Little desegregation occurred in '50s and early '60s
- Larger southern districts desegregated after 1968 *Green* decision
- Non-Southern districts desegregated in large number after 1973 *Keyes* decision


SCHOOL SEGREGATION, 1952
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
DC
MD
DE
NJ
CT
RI
MA
VT
NH
ME
Legal segregation required
Legal segregation permitted
Legal segregation prohibited
No specific legislation on segregation


School Desegregation Court Order Dates
Number of School Districts
160
140
120
100
80
60
40
20
54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82
Initial Year of Court Order
Non-South
South

Serious efforts started in late 1960s



Source: Orfield and Lee, 2006

4 Periods of the Process of Desegregation

1. From neonatal and infancy (1954-65)
2. To adolescence (1966-75),
3. To young adulthood (1976-1989), and
4. To legacy in the next generation (1990-present).

Builds on prior findings of:
"Long-run Impacts of Desegregation & School Quality on Adult Attainments"

Research Design

- 1,057 school districts implemented deseg plans between 1954-90
- Most desegregation orders between 1968-78 (some earlier/later)
- Identification comes from random timing of court orders
- Diffs in childhood exposure to school integration based on district of upbringing
- Compare adult attainment outcomes of those who grew up in…

  schools under court-ordered deseg plan during childhood
  vs.
  school districts that implemented deseg ***after*** age ≥18

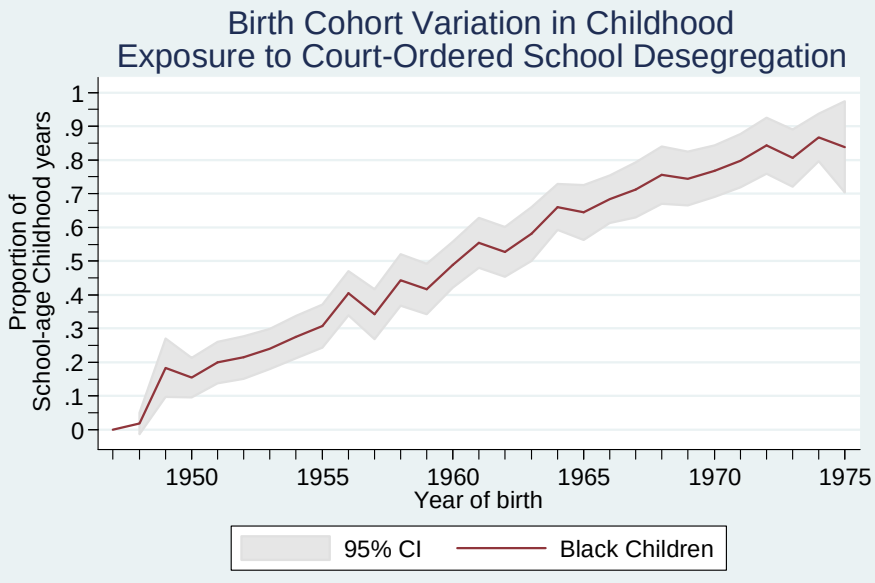
Data: Linking 3 Generations of Adult Outcomes

PSID individuals born between 1950-1975 followed up to 2017

- Educational attainment & SES status in adulthood (1984-2017);
- Data linked to census block in childhood

Resulting Sample:

- 73,087 person-year obs
  - from 7,111 individuals
  - from 2,275 families
  - from 1,599 neighborhoods in 299 counties
- Mean age = 38, range [20,57], 37% black
- Matched to their children's outcomes (PSID-CDS-TA)…
  - 1975-2010 college name (IPEDS)—college quality/selectivity indicators
  - 1960-2000 Census data, case inventory of desegregation court cases
  - 1955-1990 Office of Civil Rights (Logan, American Communities Project)
  - 1962-2000 Census of Governments, and Common Core data (compiled by NCES)



PSID individuals born 1947-1975, followed up to 2007.

Methodology

- Use variation across school districts in diff-in-diff model:
- Identification comes from variation across school districts across birth cohorts in adoption of desegregation plans
- Controls for childhood school district fixed effects, birth cohort effects, childhood family factors, age, gender
- Models run separately by Race

Model Specification #1

Adult Outcomes of Interest: Educational Attainment, Earnings, Health, Generational Mobility

Pre-Plan Linear Trend

Post-Plan Linear Trend, 0-12 years of exposure

$$Y_{icb} = \theta_0\left(t - T_c^*\right) \cdot D_{cb} 1\left(t - T_c^* < 0\right) + \theta_1\left(t - T_c^*\right) \cdot D_{cb} 1\left(0 \le t - T_c^* \le 12\right)$$
$$+ \theta_2\left(t - T_c^*\right) \cdot D_{cb} 1\left(t - T_c^* > 12\right) + X_{icb}\beta + \eta_c + \lambda_b + \varepsilon_{icb}$$

Post-Plan Linear Trend, Beyond School-age Years

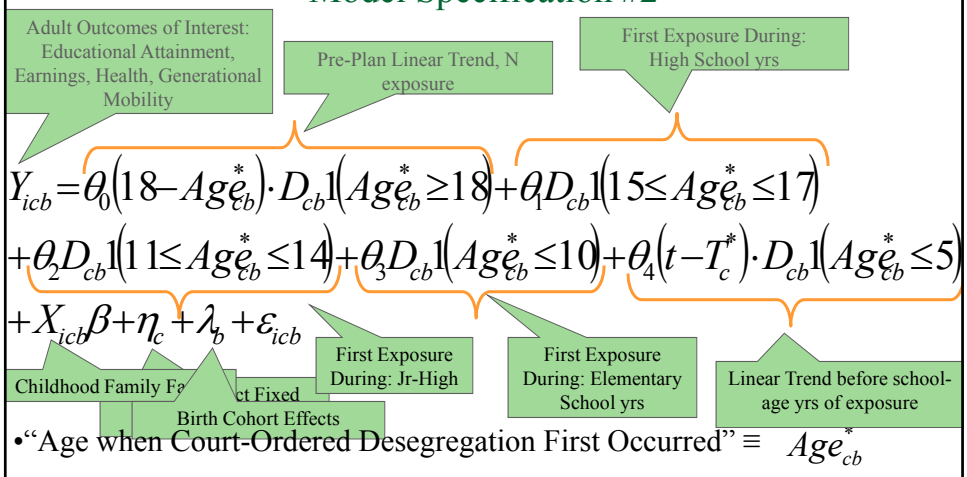
Childhood Family Factors

School District Fixed Effects

Birth Cohort Effects

•"Year Aged 17 – Year of Initial Court Order" ≡ $\left(t - T_c^*\right)$

Model Specification #2



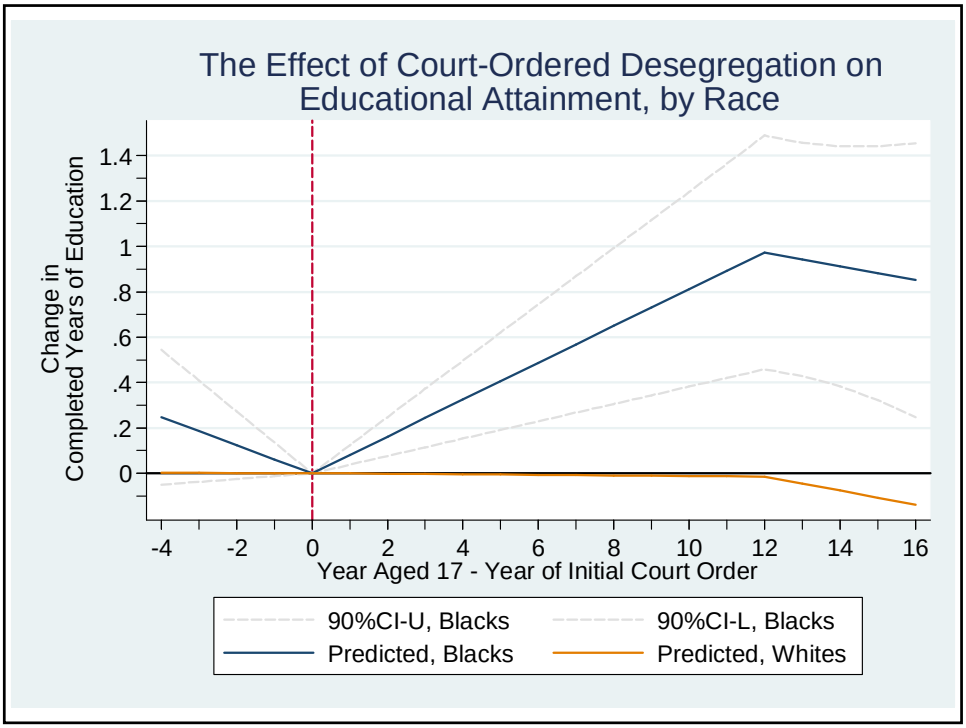
- "Age when Court-Ordered Desegregation First Occurred" ≡ Age^*_{cb}
- Key Parameters of Interest, First Exposure During: High School (θ_1) vs. Jr-High (θ_2) vs. Elementary School yrs (θ_3), (relative to N exposure)
- Specification Test: θ_4 should be insignificant, if consistent w/ causal impact of desegregation

Other coincident policies controlled for:

- Head Start spend (Johnson,'11; Miller/Ludwig,'07)
- School district per-pupil spending, 1962-92
- Timing of Kindergarten intro, state-funded initiatives (Cascio, 2010)
- County-level gov't transfer programs (1959-79: REIS (Hoynes et al., 2010)); avg during childhood ages
  - Medicaid/AFDC/Food Stamps/UI…

Progression of Model Specifications

Childhood county fixed effects?	Y	Y	Y	Y	Y	Y	Y
Race-specific year of birth fixed effects?	Y	Y	Y	Y	Y	Y	Y
Race-by-region of birth cohort trends? (race*region of birth*year of birth)	N	N	Y	Y	Y	Y	--
Controls for child family/neighborhood factors?	N	N	N	Y	Y	Y	Y
Controls for county per-capita govt programs during childhood? (Head Start; food stamps & public assistance; medicaid; UI)	N	N	N	N	Y	Y	Y
Controls for state-funded kindergarten intiatives?	N	N	N	N	Y	Y	Y
Race*region-specific year of birth fixed effects? (race*region of birth*year of birth FE (fully interacted))	N	N	N	N	N	N	Y



CDS-TA: Next Generation Outcomes

- America's Family Tree
  - Not just longitudinal…

PSID-CDS I/II/III-TA (1968-2017)

- Following CDS II and III to age 18-25+
- TA Has Been Successful 2005-2017
  (pre- Split off data – very extensive)
- CCD Files 2002/03 matched to PSID CDS (N=3,563)
- IPEDS Files (1980-2010) matched to PSID-TA (N=745)

Methods

- Next Generation Outcomes of Interest
  - Cognitive test scores (math & reading)
  - Grade Repetition
  - High School Graduation
  - College Quality/Selectivity (SAT/ACT scores)
  - Racial composition of College attended
- Parent's Childhood family background factors:
  - Race
  - Family structure
  - Birth weight
  - Health insurance
  - Parental…
    - education
    - family income
    - health behaviors (smoking, alcohol use)
- Parent's Childhood neighborhood factors
  - Neighborhood poverty
  - Crime
  - Residential segregation
  - Housing quality
  - Crowding
  - # Neighbors kNwn
  - Informal support

2SLS/IV Model Specification

Parental Educational Attainment

Vector of Parent School Desegregation Exposure (Instrument)

$$(1) PEduc_{cf} = \theta_{1R} DSeg_c + \theta_{2R} DSeg_c * White_f + \theta_3 X_f + \gamma_c + \mu_{cf}$$

$$(2) Y_{fi} = \beta_1 PEduc_f + \beta_2 X_{fi(R)} + \eta_c + \varepsilon_{fi}$$

Next Generation Outcomes of Interest: Test Scores, Grade Repetition, HS Grad, College Quality

Exogenous Controls: Parent & Child Yr of Birth FE*Race, Gender, Parent Region of Birth Trends*Race…

Parent School District/Cnty Fixed Effects

SE two-way clustered at parental county of upbringing & child

2SLS/IV Estimates of Effects of Parental Education on Children's Academic Achievement

Dependent variable (second stage):

	Reading Std Test Score (Woodcock-Johnson)		Math Std Test Score (Woodcock-Johnson)	
	(1)	(2)	(3)	(4)
	OLS	2SLS/IV	OLS	2SLS/IV
Parental Education	1.9943***	3.9596**	1.7268***	3.3760**
	(0.1904)	(1.9197)	(0.1588)	(1.7667)
Number of Children	1,077	1,077	1,077	1,077
Number of Parental Counties of upbringing	130	130	130	130

2SLS/IV Estimates of Effects of Parental Education on Children's Likelihood of Grade Repetition

	Dep var (second stage): Prob(Repeat Grade)
	(1)
	2SLS/IV
Parental Education	**-0.0565***
	(0.0410)
Number of Children	614
Number of Parental Counties of upbringing	108

2SLS/IV Estimates of Effects of Parental Education on Children's Likelihood of Graduating from High School

	Dep var (second stage): Prob(HS Graduate)
	(1)
	2SLS/IV
Parental Education	**0.0284***
	(0.0176)
Number of Children	2,245
Number of Parental Counties of upbringing	194

2SLS/IV Estimates of Effects of Parental Education on Children's College Quality/Selectivity

Dep var (second stage):

	Avg ACT score @College Attended	
	(1)	(2)
	OLS	**2SLS/IV**
Parental Education	**0.4169*****	**0.7850*****
	(0.0784)	(0.2774)
Number of Children	294	294
Number of Parental Counties of upbringing	90	90

Robust standard errors in parentheses (two-way clustered at parental county of upbringing & child)

*** p<0.01, ** p<0.05, * p<0.10

2SLS/IV Estimates of Effects of Parental Education on Children's College Quality/Selectivity

Dependent variable (second stage):

	25^{th} percentile ACT score @College Attended		75^{th} percentile ACT score @College Attended	
	(1)	(2)	(3)	(4)
	OLS	**2SLS/IV**	**OLS**	**2SLS/IV**
Parental Education	**0.3578*****	**0.4251**	**0.3267*****	**0.6898*****
	(0.1209)	(0.4428)	(0.1044)	(0.2174)
Number of Children	315	315	315	315
Number of Parental Counties of upbringing	96	96	96	96

Robust standard errors in parentheses (two-way clustered at parental county of upbringing & child)

*** p<0.01, ** p<0.05, * p<0.10

2SLS/IV Estimates of Effects of Parental Education on Children's College Quality/Selectivity

Dependent variable (second stage):

	25th%ile ACT math score @College Attended		75th%ile ACT math score @College Attended	
	(1)	(2)	(3)	(4)
	OLS	**2SLS/IV**	**OLS**	**2SLS/IV**
Parental Education	**0.3060*** ** (0.1154)	**0.6154*** (0.3402)	**0.3201** ** (0.1285)	**0.6840** ** (0.2724)
Number of Children	283	283	283	283
Number of Parental Counties of upbringing	93	93	93	93

Robust standard errors in parentheses (two-way clustered at parental county of upbringing & child)
*** p<0.01, ** p<0.05, * p<0.10

2SLS/IV Estimates of Effects of Parental Education on Children's College Quality/Selectivity

Dependent variable (second stage):

	25th%ile ACT verb score @College Attended		75th%ile ACT verb score @College Attended	
	(1)	(2)	(3)	(4)
	OLS	**2SLS/IV**	**OLS**	**2SLS/IV**
Parental Education	**0.3528*** ** (0.1181)	**0.8252** ** (0.3770)	**0.2965** ** (0.1150)	**0.8402*** ** (0.3021)
Number of Children	283	283	283	283
Number of Parental Counties of upbringing	93	93	93	93

Robust standard errors in parentheses (two-way clustered at parental county of upbringing & child)
*** p<0.01, ** p<0.05, * p<0.10

2SLS/IV Estimates of Effects of Parental Education on Children's College Quality/Selectivity

Dependent variable (second stage):

	25th%ile SAT math score @College Attended		75th%ile SAT math score @College Attended	
	(1)	(2)	(3)	(4)
	OLS	**2SLS/IV**	**OLS**	**2SLS/IV**
Parental Education	**5.3527****	**5.4967**	**6.2256****	**8.3874****
	(2.6151)	(4.5443)	(2.4780)	(4.0892)
Number of Children	304	304	304	304
Number of Parental Counties of upbringing	94	94	94	94

Robust standard errors in parentheses (two-way clustered at parental county of upbringing & child)

*** p<0.01, ** p<0.05, * p<0.10

2SLS/IV Estimates of Effects of Parental Education on Children's College Quality/Selectivity

Dependent variable (second stage):

	25th%ile SAT verb score @College Attended		75th%ile SAT verb score @College Attended	
	(1)	(2)	(3)	(4)
	OLS	**2SLS/IV**	**OLS**	**2SLS/IV**
Parental Education	**5.4705****	**5.8570***	**5.5984****	**5.7282***
	(2.3002)	(3.2586)	(2.3226)	(3.6019)
Number of Children	304	304	304	304
Number of Parental Counties of upbringing	94	94	94	94

Robust standard errors in parentheses (two-way clustered at parental county of upbringing & child)

*** p<0.01, ** p<0.05, * p<0.10

Reduced-form Estimates of Effects of Parental School Desegregation Exposure on Racial Composition of Children's Selected College

	Dep variable
	%White @Kid's College Attended
Parent Age when Initial Court Order occurred:	OLS
≥18, no exposure (reference category)	
High School (dummy 0|1, age 15-17)	0.1096
	(0.1000)
Middle School (dummy 0|1, age 11-14)	0.3567**
	(0.1411)
Elementary School (dummy 0|1, age ≤10)	0.4678***
	(0.1799)
High School (dummy 0|1, age 15-17)*White	-0.1294
	(0.0977)
Middle School (dummy 0|1, age 11-14)*White	-0.2614**
	(0.1294)
Elementary School (dummy 0|1, age ≤10)*White	-0.2405*
	(0.1744)
Number of Children	503
Number of Parental Counties of upbringing	119

Robust standard errors in parentheses (2-way clustered at parental county of upbringing & child)
*** p<0.01, ** p<0.05, * p<0.10