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The Effectiveness of the Food Stamp Program at Reducing Racial Differences in the Intergenerational Persistence of Poverty

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ABSTRACT

This paper investigates the effects of the Food Stamp Program (FSP) on racial disparities in the intergenerational persistence of poverty. We apply staggered difference-in-difference models that exploit variation in the timing of county-level FSP rollouts using data from the restricted-access version of the Panel Study of Income Dynamics (PSID) from 1968 to 2019. Black individuals who experience childhood poverty are more likely than similar White individuals to also experience poverty in adulthood. We find, however, that the FSP expansion reduced the likelihood of poverty for all adults by 5 percentage points, with the strongest reductions found for Black adults whose parents did not have a high school degree. The FSP reduced deep poverty in adulthood by 9 percentage points for Black adults with less-educated parents, stronger than the effects for White adults and for Black adults with more-educated parents. The findings suggest that income transfers that reduce poverty during childhood can contribute to reduced poverty in adulthood, and also reduce racial gaps therein.

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INTRODUCTION

In 2018, Black children were more than three times as likely as White children to live in poverty (Semega et al., 2019)[1], and Black children who experience poverty during childhood are nearly three times as likely to be poor in young adulthood relative to White children who experience childhood poverty.[2] Income support policies are known to reduce levels of child poverty and have the potential to reduce racial disparities in child poverty (Fox 2019; Hoynes, Page and Stevens 2006; Wimer et al. 2016). Less clear, however, is the extent to which income support policies influence the intergenerational persistence of poverty, and if the effects on intergenerational poverty differ by race.

The anti-poverty effects of tax and transfer programs are generally studied in cross-sectional perspective. In 2019, for example, taxes and transfers combined to lift nearly 40 million U.S. residents above the poverty line.[3] While useful, these point-in-time estimates are limited in their ability to inform us of how income transfers affect the persistence of poverty across generations and over the life-course (Bane and Ellwood 1986; Brooks-Gunn and Duncan 1997; Duncan and Magnuson 2013; Mayer 1997; Morduch and Siwicki 2017).

Longitudinal studies of policy impacts document how tax and transfer programs can contribute to short- or medium-term outcomes ranging from improved childhood health, test scores, educational outcomes, adult income, and more (Almond, Hoynes and Schanzenbach 2008; Bastian and Michelmore 2018; Dahl and Lochner 2008; Duncan, Morris and Rodrigues 2011; East 2018; Evans and Garthwaite 2014; Hoynes, Miller and Simon 2015; Hoynes and Patel 2015; Jones,

[1] In 2018, the poverty rate of White, non-Hispanic children (under 18) was 8.9% while Black children had a poverty rate of 29.5%. Table B-6, "Poverty Status of People by Age, Race, and Hispanic Origin: 1959 to 2018" (Semega et al., 2019)

[2] Authors' calculations from the Panel Study of Income Dynamics data.

[3] The poverty line is calculated using the Supplemental Poverty Measure (Fox 2019)

Simeonova and Akee 2020). It is possible that these short- and medium-term benefits also reduce the link between childhood economic conditions with the likelihood of poverty in adulthood (the intergenerational persistence of poverty). Further, prior studies suggest that any effect of income support programs on intergenerational poverty may also vary by race and ethnicity (Almond, Hoynes and Schanzenbach 2008; Bastian and Michelmore 2018; Jones, Simeonova and Akee 2020). If Black individuals have lower family incomes during childhood, for example, it is possible that they benefit to a greater extent, on average, than White individuals receiving the same transfer. Conversely, if White individuals are more likely to access and benefit from a given program, their longer-run economic outcomes may, on average, improve more.

This study investigates how the introduction of one income-support program – the Food Stamp Program (FSP) – influenced racial differences in the intergenerational persistence of poverty. Using a modified version of the Panel Study of Income Dynamics (PSID), we apply updated difference-in-differences methods intended to address staggered treatments in panel data. Specifically, we exploit the county-level rollout of the FSP (which is contemporarily known as the Supplemental Nutrition Assistance Program, or SNAP) on intergenerational poverty by race/ethnicity. We proxy for exposure to childhood poverty using information on parental education and we validate this proxy on observed poverty in early childhood, bounded by birth and age 5. In young adulthood, we primarily analyze a pre-tax/transfer poverty measure (primarily market earnings) relative to the Official Poverty Measure (OPM) poverty threshold. Our conceptual focus on upward mobility from a state of disadvantage (poverty) contrasts this study from much of the economic mobility literature, which has primarily focused on parent-child (often father-son) associations in earnings or income across the distribution (Chetty et al. 2014; Chetty

et al. 2018; Chetty et al. 2020; Solon 1992; Solon 1999; Torche 2011; Torche 2015; Carneiro et al. 2021).

We find strong evidence of intergenerational persistence of poverty for both Black and White respondents of the PSID: adults who spent more time in childhood poverty are more likely to be in poverty as adults. Our analyses reveal, however, that differential exposure to the FSP reduces the intergenerational persistence of poverty. Overall, we find that FSP exposure contributed to a 5-percentage-point reduction in the likelihood of poverty in adulthood, largely mediated through greater work intensity in adulthood. Among Black respondents specifically, however, the FSP had particularly strong effects (a 7-percentage-point reduction in adult poverty) among those whose parents did not complete high school, while the effect for Black respondents with more-educated parents was smaller and insignificant (3.3 percentage point reduction). The FSP also led to particularly large reductions in *deep* poverty (0-50% of the OPM threshold) for Black respondents with less-educated parents. The findings suggest that the introduction of the FSP contributed to reductions in racial gaps in the intergenerational persistence of poverty.

POLICY CONTEXT

The FSP is the predecessor program for what is today known as the Supplemental Nutrition Assistance Program (SNAP). The goal of the FSP was to improve nutrition and health among low-income households. Beginning with pilot programs among a set of poor counties in 1961, the FSP expanded quickly. Following the success of the pilot programs, the Food Stamp Act of 1964 was passed, which allowed counties to start their own local FSPs using federal funds. At this stage, the FSP was a geographically-dependent policy with income thresholds used to determine individual and household eligibility. As the FSP was rolled out across different localities in the years following the Food Stamp Act, and national attention turned to hunger (Berry 1984), the Food

Stamp Act was amended to mandate universal geographic coverage by 1975. The Food and Agriculture Act of 1977 reformed the FSP significantly, including the elimination of the purchase requirement and categorical eligibility, establishing statutory income eligibility at the poverty line, raising the resource limit, modifications to eligibility, and more.

The expansion of the FSP has been shown to improve the economic well-being of low-income families across numerous measures. When considering the direct effect of the FSP on poverty, the FSP leads to a reduction in both the poverty gap and squared poverty gap among recipients (Jolliffe et al. 2005). These direct reductions in experienced poverty have positive effects on the health of recipients, including increased birth weights of children among the lowest birth-weight groups (Almond et al. 2011). The FSP has also been shown to increase access to economic resources for children, from birth to age five, leading to increased human capital attainment, economic self-sufficiency, longevity, neighborhood quality, and a reduced likelihood of being incarcerated (Bailey et al. 2020). However, the extent to which these early benefits translate into greater economic well-being in adulthood, and how that varies by childhood disadvantage and race/ethnicity, is less clear from prior research.

THEORY

To understand racial differences in the intergenerational transmission of poverty and the role of the FSP, we rely upon the intertemporal model of family consumption and investment of Becker and Tomes (1979, 1986) in which parents maximize their utility by allocating their permanent income over their own consumption and investments in their children. Along with widely used assumptions about the functional forms of parental preference and human capital production functions, this model can be represented empirically by an intergenerational transmission of poverty status, as shown in Equation (1). In this form, adult poverty status

($YaPov_i$) is regressed on the childhood poverty status of person i's parent, which is synonymous with childhood poverty status ($ChPov_i$), where β_1 represents the correlation coefficient between childhood and adult poverty status and ϵ_i, represents an error term.

$$YaPov_i = \beta_1 ChPov_i + \epsilon_i \quad (1)$$

One advantage of this formulation for our purposes is we can represent adult human capital (HKa_i), which is inversely associated with adult poverty status, as the result of investments undertaken by parents (Ic_i) and the public, in the form of health, education, or, in our case, food and nutritional assistance (FSPc_i).

$$HKa_i = f(Ic_i, \text{FSP}c_i) + nc_i \ (2)$$

In Equation (2), nc_i represents the influences of luck, family background, financial inheritance, and parental human capital on the distribution of income within standard microeconomic theory. Solon (2004) points to several implications of this formulation after assuming a particular functional form for Equation (2). The most important of these for our purposes relates to the steady-state correlation between the earnings of parents and their adult children. This correlation is lower for children in families living in counties with more progressive public benefits, such as FSP benefits, that increase children's human capital accumulation. More progressive public benefits decline as post-tax income increases. Thus, children growing up in families with low earnings that reside in such counties are less likely to have low earnings in adulthood than children growing up in families with similar earnings who reside in counties with less progressive public benefits. To the extent that income and race are positively associated, the effect of progressive public benefits on the intergenerational transmission of earnings could be that: racial differentials in adult poverty status will be lower for children who grow up in counties with more progressive public benefits.

Nevertheless, the effect of progressive public benefits on the intergenerational persistence of poverty is ambiguous. While increased FSP benefits may reduce intergenerational income gaps for Black children in their adulthood relative to White children, these benefits may still be more likely to push White children, rather than Black children, over the poverty threshold in adulthood. Indeed, prior studies show that because the incomes of Black children in adulthood are concentrated at the low end of the distribution, the intergenerational persistence of poverty is lower among White adults (Corcoran and Adams, 1997).

Aside from differential starting points in the income distribution, it may be that equivalent increases in absolute income during childhood contribute to more beneficial longer-run consequences for White individuals, given that this group faces fewer structural barriers toward economic success (Wilson et al., 1995; Hamilton and Darity, 2017) Consider, as one example, that Black families are more likely than comparable White families to reside in disadvantaged and segregated neighborhoods (Wilson 2012; Williams and Collins, 2001; Charles, 2003; Denton and Massey, 1988), and that Black adults face persistent discrimination in labor markets (Pager, 2008; Lang and Manove, 2011; Lang and Spitzer, 2020); thus, an increase in income for the average Black family may be insufficient to overcome other structural barriers to increase the child's long-run wellbeing compared to a White family receiving the same income transfer.

DATA AND METHODS

Our primary data source is the restricted-use version of the Panel Study of Income Dynamics (PSID). The PSID began in 1968 and follows families longitudinally across their life spans. As PSID families have children, the study also follows these children longitudinally, including when they establish their own households, making the dataset one of the foundational sources of data on intergenerational poverty and mobility available in the U.S. The survey captures

socio-economic outcomes for individuals from their initial years of life well into adulthood. The PSID covers the period from 1968 to 2019, allowing us to capture the later portion of the expansion of the FSP. A key advantage of the restricted-use version of the PSID is the inclusion of geographic identifiers for all households, including the county where a household head grew-up. We apply an indicator capturing the staggered rollout of SNAP, at the county-level, as used by Almond et al. (2011), Hoynes and Schanzenbach (2012), Hoynes, et al. (2016), and Bailey et al. (2020). Information on the rollout of the FSP comes from Hoynes, et al. (2016).[4]

Table 1: Descriptive Statistics - Respondent Averages in Young Adulthood, Ages 25 to 35

Variable	Obs.	Mean	St Dev	Min	Max
Pre-Tax/Transfer Poverty (Child)	478	0.222	0.368	0	1
Pre-Tax/Transfer Poverty (Adult)	5,410	0.178	0.303	0	1
Neither Parent Grad. High School	5,410	0.521	0.500	0	1
Share SNAP in Childhood	5,410	0.05	0.171	0	0.983
FSP Group 1961 - 1966	2,954	0.222	0.416	0	1
FSP Group 1967	2,954	0.128	0.334	0	1
FSP Group 1968	2,954	0.141	0.348	0	1
FSP Group 1969 – 1971	2,954	0.281	0.449	0	1
FSP Group 1972 - 1974	2,954	0.228	0.420	0	1
Birth Year	5,410	1951.8	8.66	1935	1974
Black	5,410	0.409	0.492	0	1
White	5,410	0.591	0.492	0	1
Hispanic (and Black or White)	5,410	0.013	0.111	0	1
Female	5,410	0.493	0.5	0	1
Family Size	5,410	3.345	1.486	1	9
Number of Children	5,410	1.563	1.341	0	8
Completed High School	5,410	0.734	0.442	0	1
Completed College	5,410	0.219	0.414	0	1
Employed	5,410	0.836	0.283	0	1
Employed Full-Time	5,410	0.547	0.374	0	1
Employed Part-Time	5,410	0.289	0.277	0	1
Ever Married	5,410	0.79	0.407	0	1
Pre-Tax/Transfer Income	5,410	63,618	40,829	0	424,934

[4] Unlike previous work leveraging the county rollout of the FSP, our primary analysis will not utilize the dosage of exposure to the FSP during early childhood due to limitations of our analytic approach. Out methodology is built around a binary treatment indicator. Previous work around continuous treatments in difference-in-differences methods has identified issues of identification (Callaway and Goodman-Bacon, 2021), as discussed in our section titled "Analytical Strategy."

Note: This table shows the descriptive statistics across characteristics of respondents in the sample. The observation number is the number of unique respondents after accounting for the sample selection criteria. The mean value is the average from ages 25 to 35 of respondents, but characteristics such as the pre-tax/transfer poverty rate as a child or an adult are time invariant.

We incorporate information on a household's pre-tax/transfer income from the Cross-National Equivalent Files (CNEF) and include respondents from both the Survey Research Center and Survey of Economic Opportunity samples.[5] Table 1 provides descriptive statistics for our sample, including poverty status and the share of respondents exposed to the FSP in different windows of the rollout, given the county they grew up in.

Given the similarities between our measures of exposure to the FSP and that of Hoynes et al. (2016), we begin the analysis by constructing a sample of respondents for whom the FSP rollout was occurring during their childhood. We test the effect of exposure to the FSP on the intergenerational persistence of poverty, which requires us to have observed both if a respondent grew up in poverty and when a respondent was exposed the FSP. Due to the timing of the FSP rollout, beginning in 1961, and the PSID's initial survey starting in 1968, we are unable to determine if a respondent was exposed to early childhood poverty, from birth to age five, unless they were born, at the earliest, five years before the PSID began. When restricting the sample of the PSID to only those respondents who we can observe the level of childhood poverty exposure, and excluding respondents who were born after The Food and Agriculture Act of 1977, we are left with a sample of only 478 unique respondents. This sample of respondents must have been observed at least once in three age ranges: birth to five, six to 18, and 25 to 35. Of this group, 45% are women. The sample is composed exclusively of respondents identified as Black or White, of which 61.5% are White and 38.5% are Black.

[5] See the PSID-CNEF codebook hosted by the Cross-National Equivalent File site.

This restrictive sample, while allowing us to directly observe shifts in the intergenerational transmission of poverty through the measurement of childhood poverty exposure, is limited to a small subset of all PSID respondents. Our analysis differs from previous work that has leveraged the PSID because of the need to observe childhood poverty characteristics, limiting the use of cohorts born before the PSID began as a control group. Fortunately, the PSID does ask respondents about the educational attainment of a respondent's parents. This offers us a window into the set of respondents who were more likely to have been exposed to childhood poverty, even if we cannot directly observe their childhood.

We construct a secondary sample of the PSID that consists of all respondents who were observed at least once in the age range of 25 to 35 (early adulthood) and were born between 1950 and 1976. To proxy for the likelihood of having experienced childhood poverty, we define an indicator variable for if no identified parent or guardian of a respondent graduated high school. This sample is significantly less restrictive than the previous, but it requires a less precise measure of early childhood poverty exposure.

We leverage both samples in our analysis and will refer to the less restrictive sample as our "full" sample and the more restrictive sample as our "restricted" sample. Due to the sample criteria, the restricted sample is a subset of the full sample. Table 2 describes the exposure to poverty within the restricted sample, split by sex and race. We define poverty status using the Official Poverty Measure (OPM) poverty thresholds and calculated using pre-tax and pre-transfer income. We prefer pre-tax and transfer income, rather than post-tax and transfer income, to reduce any mechanical effect of the receipt of FSP benefits on our measure of poverty. Supplemental Poverty Measure (SPM) thresholds are not available or consistently replicable in the PSID. Table 2 shows that White respondents spend less of their childhood in poverty and are less likely to be exposed

to poverty in early childhood, relative to Black respondents. These differences carry over into young adulthood.

Table 2: Rates of Poverty During Early Childhood and Adulthood

	Share of Years in Poverty, Age 0-5	At Least One Year in Poverty, Age 0-5	Mean Poverty Rate, Age 25-35
White Men	0.084	0.161	0.053
Black Men	0.436	0.565	0.211
White Women	0.034	0.1	0.1
Black Women	0.526	0.654	0.419

Note: Authors' calculations from the PSID. Poverty = modified version of OPM with pre-tax/transfer income definition. This information comes from our restricted sample, as described in the Data section.

ANALYTICAL STRATEGY

We begin the analysis by first estimating the relationship between exposure to childhood poverty and the likelihood of experiencing poverty in young adulthood using our restrictive sample. Second, we use the full sample and estimate the relationship between if neither parent completed high school and the likelihood of experiencing poverty in young adulthood. These first two steps are intended to both test for presence of an intergenerational persistence of poverty and validate the use of our proxy for childhood poverty exposure in the full sample.

After measuring the intergenerational persistence of poverty, we investigate the effect of the FSP in shaping poverty persistence. Previous work on the effect of the FSP has leveraged a two-way fixed effect approach using birth-year fixed effects and birth-state or birth-county fixed effects. We describe, and implement, this approach in the Appendix; however, we argue against such an approach for our primary analysis. One disadvantage of the two-way fixed effect approach is the time-invariant nature of the analysis at the individual level. While it would be possible to utilize a two-way fixed effect estimator, the staggered adoption and dynamic annual effects of the

FSP would result in a poor estimate of the effect of the FSP on intergenerational poverty (Goodman-Bacon 2021, Sun and Abraham 2021).

To investigate the dynamic nature of the relationship between childhood and young adulthood, we adopt a stacked difference-in-differences approach. Specifically, we use the estimator introduced by Liu, Wang, and Xu (2021), the Fixed Effect Counterfactual Estimator (FEct), which can accommodate difference-in-differences designs over unbalanced panels with staggered treatment. We define the treatment as a binary variable indicating if a respondent was exposed to the FSP between birth and age five. Respondents who are not exposed to the FSP by age five are considered untreated.

The FEct is a counterfactual first design. The FEct takes treated observations as missing, uses the control observations to build a predictive model, and then imputes a counterfactual for each treated unit in each observed period. Once created, we then estimate the average effect of the treatment on the treated, by taking the difference between the observed outcome and the predicted outcome and generate dynamic estimates of the effect of childhood poverty on poverty exposure later in life. To ensure the quality of the prediction, we utilize a cross-validation procedure which compares three different prediction methodologies. The three methods we compare are a time fixed effects model, an interactive fixed effect model, and a matrix completion method. The prediction method that performs best using the mean-squared prediction error of the cross-validated model is selected for the reported results.

When using the stacked difference-in-differences approach, we reorient the analysis at the level of age cohorts instead of linear time. By treating the analysis at the unit-age level, we control for age fixed effects. This creates an unbalanced panel intended to test if individuals who

experience poverty during childhood are at an elevated risk of experiencing poverty in young adulthood relative to those who did not experience childhood poverty.

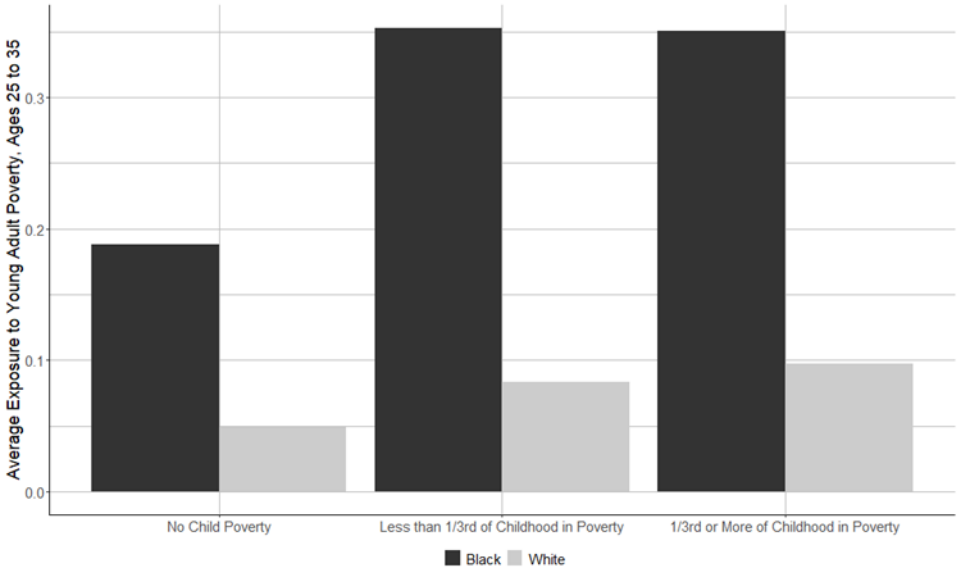
After assessing the effects of childhood poverty on the likelihood of entering poverty at later stages of life, we evaluate for the effect of the FSP on poverty exposure and a selection of mediating variables, such as earnings and employment intensity. When using the FEct estimator, we are unable to include interaction effects. As a result, when estimating the effect of the FSP, we segment models across subsets of the data including (1) only those respondents who were exposed to poverty between birth and age five, (2) or those respondents whose parents did not complete high school, (3) only White respondents, and (4) only Black respondents.

FINDINGS

The Association Between Childhood Poverty and Young Adult Poverty

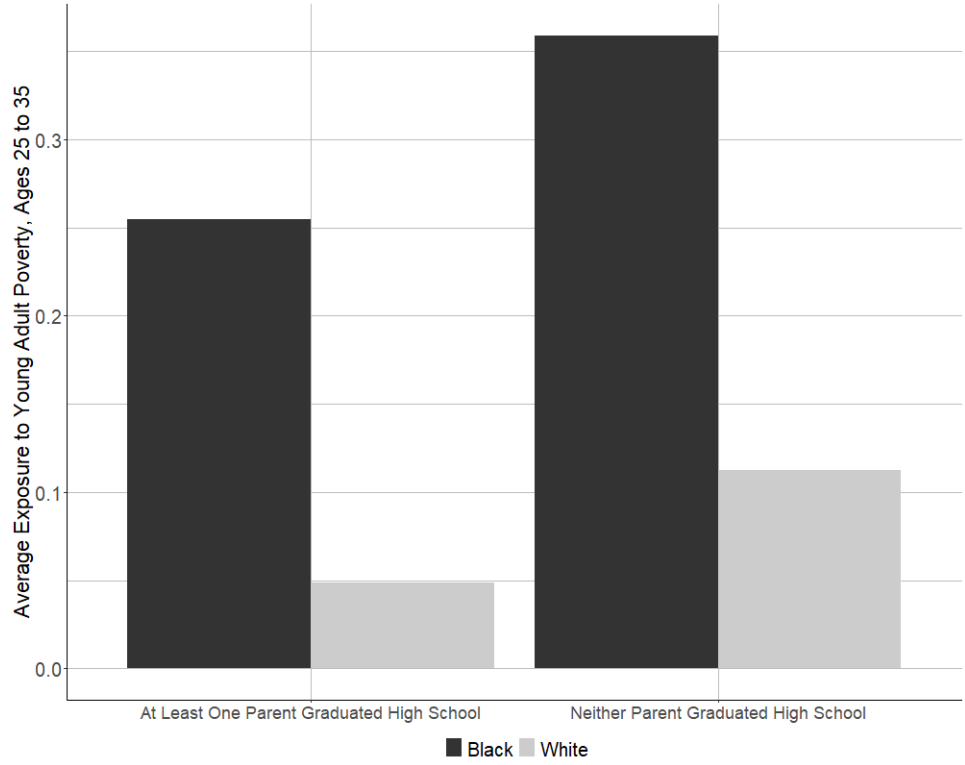
We begin the analysis by measuring the relationship between childhood poverty exposure and poverty in young adulthood. Figure 2 shows that respondents who experienced poverty in childhood also experienced more poverty in young adulthood. This positive relationship represents the intergenerational persistence of poverty. When assessing this relationship by race, we find that Black respondents are consistently more likely to experience poverty in both childhood and young adulthood. This pattern in racial differences and the positive association of childhood poverty and young adult poverty is found in our proxy analysis using parental education, as shown in Figure 3.

Figure 2: Association Between Early Childhood Poverty and Young Adult Poverty by Race



Note: This figure uses our restricted sample as it requires the observation of a respondent's childhood poverty status. Early childhood is defined as ranging from birth to age five. Young adulthood is defined as ranging from 25 to 35 years old.

Figure 3: Association Between Parental Education and Young Adult Poverty by Race



Note: This figure uses our full sample as it does not require the observation of a respondent's childhood poverty status. Young adulthood is defined as ranging from 25 to 35 years old.

Fixed Effect Counterfactual Estimator

We apply the FEct estimator to test the impact of exposure to poverty during early childhood on the likelihood of experiencing poverty during young adulthood. When estimating the persistence of poverty across Black and White respondents, we find that exposure to poverty in childhood increases the likelihood of experiencing poverty in young adulthood (Table 3). Across both Black and White respondents, having parents that did not graduate high school significantly increases the risk of experiencing poverty in young adulthood. When using the Full sample, before restricting the analysis by race, we find that having parents that did not graduate high school increases a respondent's risk of experiencing poverty in a given year of young adulthood by 6.2 percentage points.

Table 3: Effect of Childhood Poverty Exposure on the likelihood of Experiencing Poverty in Young Adulthood

Dependent Variable:				Pre-Government Transfer Poverty
Sample		Tr. N	Treatment	Effect Estimate
Restricted		1082	Childhood Poverty	0.091^{***}
				(0.026)
	Black	746	Childhood Poverty	0.172^{***}
				(0.043)
	White	336	Childhood Poverty	0.074^{***}
				(0.028)
Restricted		495	Parent(s), No H.S.	0.065^{*}
				(0.036)
	Black	328	Parent(s), No H.S.	0.082
				(0.052)
	White	167	Parent(s), No H.S.	0.076
				(0.048)
Full		11,950	Parent(s), No H.S.	0.062^{***}
				(0.011)
	Black	7,879	Parent(s), No H.S.	0.079^{***}
				(0.019)
	White	4,071	Parent(s), No H.S.	0.074^{***}
				(0.014)

Note: Bootstrapped standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Variables used as controls in support of the predicted counterfactual: Year of birth, Female, and Black. Tr. N. is the number of treated unit-year observations We define the restricted sample as the group of respondents for whom we observe them at least once in three age ranges: birth to five, six to 18, and 25 to 35, and who were born before 1977. The full sample is composed of respondents born between 1950 and 1977 and who we observe once between the ages of 25 and 35.

Table 3 also presents estimates of the effect when making only Black-Black or White-White comparisons, changing the predicted model used by the FEct, and we find larger effect estimates for both groups: 7.9 percentage points among Black respondents and 7.4 percentage points among White respondents. These effect estimates align well among the White subset of the PSID, but appear to underestimate the intergenerational persistence of poverty among Black respondents, given the results of the restricted sample, where exposure to childhood poverty among Black respondents is estimated to increase the likelihood of experiencing poverty in young adulthood by 17.2 percentage points. It is important to note that this is not just an estimate of the share of a group that is experiencing poverty, but rather the difference in the likelihood of experiencing poverty in young adulthood conditional on having experienced it in early childhood. Differences in the effect estimate across racial subsets imply that exposure to poverty in early childhood has differing effects by race.

Table 4: Effect of Exposure to the Food Stamp Program on the Likelihood of Experiencing Poverty in Young Adulthood

Sample	Race Subset	Tr. N	Treat.	Estimated Effect
Full	All	4,869	FSP	-0.048** (0.024)
Parents did not finish High School	All	860	FSP	-0.052 (0.05)
	Black	568	FSP	-0.069* (0.042)
	White	292	FSP	0.042 (0.078)
At least one parent finished High School	All	4,009	FSP	-0.047* (0.024)
	Black	1,337	FSP	-0.033 (0.03)
	White	2,672	FSP	-0.021 (0.017)

Note: Bootstrapped standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Variables used as controls in support of the predicted counterfactual: Year of birth, Female, Black. Tr. N. is the number of treated unit-year observations. The full sample is composed of respondents born between 1950 and 1977 and who we observe once between the ages of 25 and 35.

We next turn our attention to the effect of the FSP on the intergenerational transmission of poverty. Table 4 presents the estimated effect of the FSP on the likelihood of experiencing poverty

in young adulthood across three groups of respondents: (i) the full sample, (ii) the subset of respondents in the full sample whose parents did not finish high school, and (iii) the subset of respondents in the full sample whose had at least on parent finish high school.[6]

Across the full sample in Table 4, we find that exposure to the FSP in early childhood significantly reduced the likelihood of experiencing poverty in young adulthood by 4.8 percentage points. This effect estimate is of similar magnitude across both subsets of the full sample broken out by parental education. This effect can be contrasted to the young-adult poverty rates reported in Table 2.

As discussed previously, with shifting compositions of the sample, the FEct estimates new models of the counterfactual. This can lead to effect estimates of subsets that are larger or smaller than the aggregate. We find that the group that experiences the largest reduction in the likelihood of experiencing poverty in young adulthood as a result of having been exposed to the FEct are Black respondents whose parents did not finish high school. Among this group, we report a 6.9 percentage point reduction, though it is not significant at a 95% confidence level. We find no significant decrease in the likelihood of experiencing poverty in young adulthood among White respondents whose parents did not finish high school though. Due to the sample size and slim window of the analysis, we are unable to assert that the Black and White coefficients differ at a statistically significant level.

We extend the analysis to alternative poverty bins to explore how the FSP may be impacting the depth of poverty. As discussed in the theory section, children growing up in families with low incomes that reside in counties with more progressive public benefits are perhaps less

[6] Because we are only able to proxy for childhood poverty exposure, we can view these groups as representatives of relative risk levels of childhood poverty, though some spillover does exist. It is possible that members of the third group were exposed to early childhood poverty and members of the second were not.

likely to have low incomes in adulthood, and this could translate to reductions in deep poverty, even if we do not find significant reductions in poverty at 100% of the poverty line. Table 5 highlights the effect of the FSP on alternative poverty bins. These results highlight that the bulk of the estimated effect on poverty exposure among Black respondents whose parents did not finish high school comes from a reduction in the likelihood that a respondents will experience deep poverty in young adulthood. Given the shifts in the magnitude of the effect estimates – an 8.6 percentage point reduction in the 0-50% of the poverty line range, a 9.3 percentage point reduction in the 0-75% range, and a 6.9 percentage point reduction in the 0-100% range – we can conclude that FSP exposure shifted the longer-run incomes of Black respondents up the income-to-needs distribution, even if some did not manage to fully move past the 100% OPM threshold. We do not find a similar effect among White respondents whose parents did not graduate high school.

Table 5: Effect of Exposure to the Food Stamp Program on the likelihood of Experiencing Poverty in Young Adulthood by Depth of Poverty

Dependent Variable:				Effect Estimates over a Given Range of the Official Poverty Measure			
Sample	Race Subset	Tr. N	Treat.	0-50%	0-75%	0-100%	0-125%
Full	All	4,869	FSP	-0.039*	-0.048**	-0.048**	-0.052
				(0.022)	(0.023)	(0.024)	(0.026)
Parents did not finish High School	All	860	FSP	-0.043	-0.059	-0.052	-0.064
				(0.045)	(0.047)	(0.05)	(0.053)
	Black	568	FSP	-0.086**	-0.093**	-0.069*	-0.066
				(0.039)	(0.04)	(0.042)	(0.044)
	White	292	FSP	0.031	0.051	0.042	0.012
				(0.06)	(0.069)	(0.078)	(0.084)
At least one parent finished High School	All	4,009	FSP	-0.037*	-0.045**	-0.047*	-0.05*
				(0.019)	(0.021)	(0.024)	(0.027)
	Black	1,337	FSP	-0.023	-0.02	-0.033	-0.017
				(0.026)	(0.028)	(0.03)	(0.031)
	White	2,672	FSP	-0.004	-0.011	-0.021	-0.025
				(0.006)	(0.008)	(0.017)	(0.021)

Note: Bootstrapped standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Variables used as controls in support of the predicted counterfactual: Year of birth, Female, Black. Tr. N. is the number of treated unit-year observations. The full sample is composed of respondents born between 1950 and 1977 and who we observe once between the ages of 25 and 35.

We next turn our attention to possible mediators. One limitation to the analysis of mediators is the systematic changes in mediating characteristics across cohorts. Specifically, education, and

the completion of a high school degree, is defined as a binary variable in our data, and is trending positively across cohorts at a steep rate. As shown in Figure A2, this rate is structurally asymptomatic as it approaches a value of 1. This limits that capacity of the FEct to estimate the effect of the FSP on the completion of a high school degree. The FEct can be used to estimate the effect of the FSP on mediators that are not experiencing significant pre-treatment trends toward the boundaries of their specific variable definitions. Appendix A elaborates on this constraint.

Table 6 presents the effect estimate of the FSP on a respondent's young adulthood income, part-time employment status, full-time employment status, and hourly wage. In aggregate, we find that part-time employment in young adulthood is reduced among those exposed the FSP in early childhood, with insignificant but positive effect estimates on income, full-time employment, and hourly wage. The sign of the coefficients aligns among the subset of only Black respondents, though no effect estimates are significant at the 95% confidence level. White respondents have contradictory directions in effect estimates, though none are statistically significant. These results support the case that exposure to the FSP increased labor force participation among Black respondents, though the lack of statistical significance prevents us from making a conclusive statement.

Table 6: The Effect of Exposure to the Food Stamp Program in Early Childhood on Mediating Variables

Sample	Race Subset	Tr. N	Treat.	Income	Employed Part-Time	Employed Full-Time	Hourly Wage
Parents did not finish High School	All	860	FSP	4,159.82	-0.085**	0.032	1.62
				(4,039.73)	(0.039)	(0.042)	(1.18)
	Black	568	FSP	4,770.49	-0.057*	0.055	-0.13
				(3,082.32)	(0.034)	(0.038)	(0.55)
	White	292	FSP	-1,356.78	-0.099	-0.009	4.12
				(8,491.71)	(0.062)	(0.08)	(2.85)

Note: Bootstrapped standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
Variables used as controls in support of the predicted counterfactual: Year of birth, Female, Black. Tr. N. is the number of treated unit-year observations. The full sample is composed of respondents born between 1950 and 1977 and who we observe once between the ages of 25 and 35.

DISCUSSION AND CONCLUSION

The Food Stamp Program (FSP) has been shown to increase human capital attainment, economic self-sufficiency, longevity, neighborhood quality, birth weights, and reduce the likelihood of being incarcerated. Unclear from prior research, however, is how the FSP affected adult poverty status, and how that effect varies by level of childhood disadvantage and race/ethnicity. This study analyzes how FSP exposure affected racial differences in the intergenerational persistence of poverty.

Overall, we find that FSP exposure contributed to a 5-percentage-point reduction in the likelihood of poverty in adulthood. This effect size was comparable for adults whose parents *did not* complete high school and for those adults whose parents *did* complete high school. Among Black respondents specifically, however, the FPS had particularly strong effects (a 7-percentage-point reduction in adult poverty) among those whose parents did not complete high school, while the effect for Black respondents with higher-educated parents was smaller and insignificant (3.3 percentage point reduction).

Examining distributional effects, we find particularly large reductions in *deep* poverty (0-50% of the OPM threshold) for Black respondents with lower-educated parents. Specifically, we find that FSP exposure led to a (statistically significant) 8.6 percentage point reduction in deep poverty for these Black adults, far greater than the effect for comparable White adults. The evidence thus suggests that the FSP led to a reduction in deep poverty among adults with more disadvantaged backgrounds, and especially Black adults with more disadvantaged backgrounds.

Given our assessment of potential mediators, we find evidence that the FSP's effects are driven by a transition out of part-time employment and toward full-time employment. We find large, though statistically insignificant, increases in Black pre-tax/transfer income but no

significant change in hourly wages among Black respondents. Though we are unable to test other mediators, such as health or education (see Appendix A), prior work suggests that the beneficial effects of the FSP on full-time employment, and in turn adult income, are likely channeled through more favorable health outcomes, educational attainment, and family stability (Bailey et al. 2020).

Taken with the previous literature on the effects of the FSP and SNAP, income-support policies have the potential to reduce the intergenerational persistence of poverty, as well as racial differences in poverty persistence. The FSP, in particular, reduced poverty rates among adults with and without lower-educated parents and reduced (deep) poverty rates most strongly for Black adults with less-educated parents.

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APPENDIX

Two Way Fixed Effect Results

As we emphasize in our manuscript, two-way fixed effects estimators will present biased estimates of the effect of the FSP on intergenerational poverty. We nonetheless present the results here for comparison to our primary specification. We begin the two-way fixed effect analysis by estimating the relationship between the share of childhood spent in poverty, or if neither parent completed high school, on the share of young adulthood spent in poverty. Both the share of childhood, and young adulthood, spent in poverty are time-invariant at the individual level as they are a summary of the experience of an individual over a period. We explore the role of race on this relationship with an indicator variable for if respondents are identified as Black in the PSID. We expand this analysis using a vector of controls X_i, their highest age within the young adult income bin, and the last year they are observed within the young adult income bin.

$$YaPov_i = \beta_1 ChPov_i + \beta_2 Black_i + \beta_3 ChPov_i * Black_i + X_i + \alpha_s + \tau_t + \epsilon_i \qquad (1)$$

The coefficient on our measure of childhood poverty, β_1, captures the association between childhood poverty and young adult poverty for White respondents, while the interaction term, β_3, tests for a significant difference in the relationship between childhood poverty and young adult poverty between Black and White respondents. Due to the time-invariant characteristic of our measure of poverty, individual fixed effects cannot be used. Instead, state fixed effects, α_s, are included as well as birth-year fixed effects, τ_t. While Equation (1) offers an initial perspective on

intergenerational poverty, it can be improved upon. We extend Equation (1) to include our SNAP treatment, and interaction terms, but the estimation strategy remains static.

Using the two-way fixed effect model, we estimate the relationship between the share of a respondent's observed childhood spent in poverty, from birth to age five, and the share of young adulthood spent in poverty, from age 25 to 35, shown in Table A2. These results are broken out by men and women in Table A3 and A4. In models one through four, we test for differences in the relationship between childhood poverty, exposure to FSP, and identifying as Black in the PSID, on young adulthood poverty. Model five includes the full interaction between childhood poverty, exposure to FSP, and race, and we plot the marginal effects broken out by sex in Figure 2. These estimates indicate that the black men see a statistically significant reduction in the risk of intergenerational poverty resulting from the geographic expansion of the food stamp program in the 1960s and early 70s. White men and White women report effects that are not statistically significant at a 95% level. These results also indicate that Black women are more likely to experience the intergenerational transmission of poverty following exposure to FSP.

Table A1: Association of Childhood Poverty with Young Adult Poverty by Race and Exposure to the Food Stamp Program during Childhood

Dependent Variable:	Share of Young Adulthood Spent in Poverty				
Sample:	Full Sample				
	(1)	(2)	(3)	(4)	(5)
Parent, No HS	0.15***	0.08***		0.15***	0.08***
	(0.01)	(0.01)		(0.01)	(0.01)
Black		0.20***	0.25***		0.20***
		(0.01)	(0.01)		(0.01)
Parent, No HS # Black		0.05**			0.05**
		(0.02)			(0.02)
FSP			0.01	0.02	-0.01
			(0.04)	(0.04)	(0.04)
Black # FSP			0.00		0.04
			(0.04)		(0.05)
Parent, No HS # FSP				0.07	0.04
				(0.05)	(0.09)
Black # Parent, No HS # FSP					-0.02
					(0.12)
Respondents	5,382	5,382	5,382	5,382	5,382

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FSP is the share of observed childhood, from birth to age five, where the FSP is active in a respondent's birth-county.

Table A2: Association of Childhood Poverty with Young Adult Poverty by Race and Exposure to the Food Stamp Program during Childhood among Men

Dependent Variable:	Share of Young Adulthood Spent in Poverty				
Sample:	Men				
	(1)	(2)	(3)	(4)	(5)
Parent, No HS	0.09***	0.05***		0.09***	0.05***
	(0.01)	(0.01)		(0.01)	(0.01)
Black		0.13***	0.15***		0.11***
		(0.01)	(0.01)		(0.02)
Parent, No HS # Black		0.03			0.04
		(0.02)			(0.02)
FSP			0.03	0.09*	0.03
			(0.04)	(0.04)	(0.04)
Black # FSP			0.12*		0.14*
			(0.05)		(0.06)
Parent, No HS # FSP				0.11	-0.00
				(0.07)	(0.12)
Black # Parent, No HS # FSP					0.03
					(0.15)
Observations	2,721	2,721	2,721	2,721	2,721

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FSP is the share of observed childhood, from birth to age five, where the FSP is active in a respondent's birth-county.

Table A3: Association of Childhood Poverty with Young Adult Poverty by Race and Exposure to the Food Stamp Program during Childhood among Women

Dependent Variable:	Share of Young Adulthood Spent in Poverty				
Sample:	Women				
	(1)	(2)	(3)	(4)	(5)
Parent, No HS	0.18***	0.09***		0.18***	0.09***
	(0.01)	(0.02)		(0.01)	(0.02)
Black		0.27***	0.31***		0.28***
		(0.02)	(0.01)		(0.02)
Parent, No HS # Black		0.01			0.01
		(0.03)			(0.03)
FSP			0.03	-0.03	-0.01
			(0.08)	(0.07)	(0.08)
Black # FSP			-0.10		-0.06
			(0.07)		(0.09)
Parent, No HS # FSP				-0.01	0.06
				(0.08)	(0.14)
Black # Parent, No HS # FSP					-0.05
					(0.17)
Observations	2,656	2,656	2,656	2,656	2,656

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FSP is the share of observed childhood, from birth to age five, where the FSP is active in a respondent's birth-county.

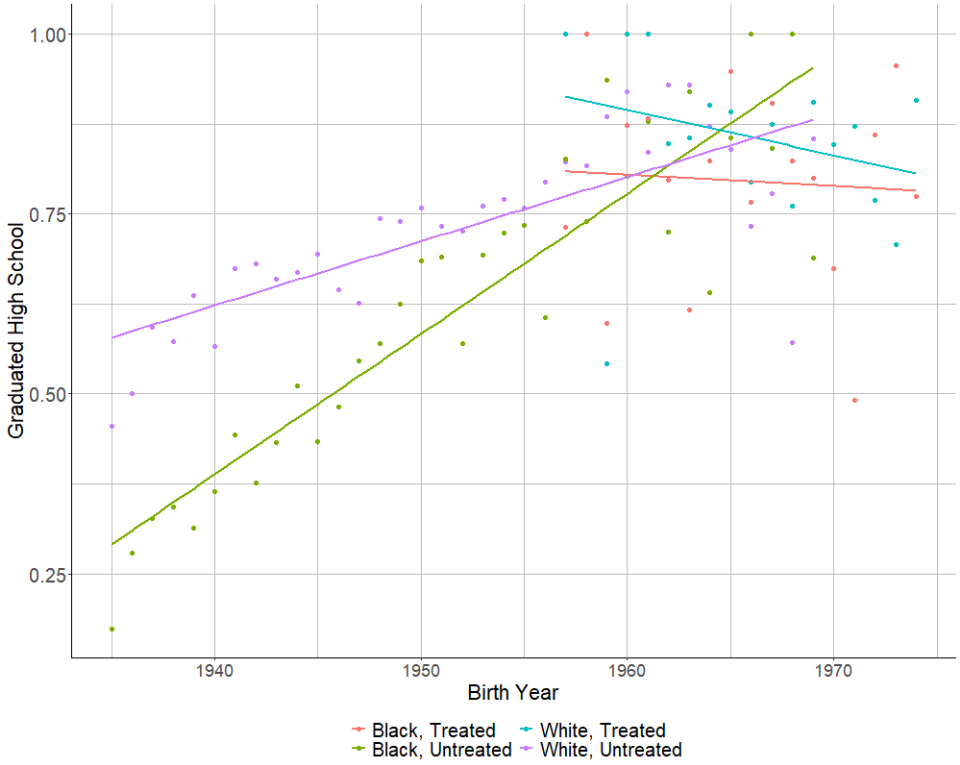
Details on the Fixed Effect Counterfactual Estimator and Mediator Variables

As discussed in the Analytical Strategy section, we employ the Fixed Effect Counterfactual Estimator to assess the effect of childhood poverty exposure and the food stamp program. We later expand our estimates to include a mediator analysis, focusing on the log of household income and employment. Previous work on the effects of the FSP and SNAP would also identify education as a primary mediator when exploring the intergenerational transmission of poverty. Unfortunately, we do not feel that our analytical strategy is well situated to explore that mediator. This section will explore why that is.

The FEct relies on the control group to be a good predictor of the treated groups alternative outcomes, were they not treated. This is not a unique characteristic of the FEct, as all difference-in-differences designs rely on this. What is interesting about our use-case is that we define the control group primarily across generations, in line with previous work on the FSP and SNAP. This means that it is crucial that any general trends across generations are accurately accounted for, otherwise estimates of the treatment effect may be biased.

Our analysis shows that the completion of a high school education presents a challenge because of the strong positive association between birth year and the likelihood of graduating from high school, shown in Figure A1. This means that using the FEct to estimate the effect of the FSP on high school graduation would produce unreasonable predictions or conflate later generations' improved access to education with their exposure to the FSP. We find that the inclusion or exclusion of birth year information results in a significant positive or negative effect of the FSP, respectively. Given these limitations, we conclude that our analytical strategy is not well suited to exploring education as a mediator in the intergenerational transmission of poverty.

Figure A1: Rate of High School Graduation by Birth Year and Treatment Group



Note: This figure highlights the general violation in parallel trends with regard to high school completion.