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Family Income and Gang Presence in the Neighborhood: Diminished Returns of Black Families

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Abstract: *Background:* Based on the Minorities' Diminished Returns (MDRs) framework, indicators of high socioeconomic status, such as higher family income, show weaker protective effects on various developmental, behavioral, and health outcomes for Black than White families. As a result of these MDRs, Black families who access education and income still report high levels of depression, smoking, obesity, and chronic disease. Limited knowledge exists on MDRs of income on neighborhood quality. *Aims:* Built on the MDRs framework, this study tested the hypothesis of whether the effect of family income and maternal education at birth on neighborhood gang presence varies between Black and White families. The hypotheses were that: (1) higher income families would report lower gang presence in their neighborhood, and (2) compared to Whites, Blacks would show weaker protective effects of family income on gang presence in their neighborhood. *Methods:* The Fragile Families and Child Wellbeing Study is a 15-year follow up study of a random sample of births in cities with larger than 200,000 population. Two thousand nine hundred and nineteen White or Black families were included and were followed from birth of their child for 15 years. The predictors were family income and maternal education at birth, treated as categorical variables. The outcome was gang presence in the neighborhood at age 15. Logistic regression was used for data analysis. *Results:* Higher maternal education at birth was inversely associated with gang presence in the neighborhoods, while family income at birth did not show an effect on reducing gang presence in the neighborhood at age 15. Family income at birth and race interact, suggesting that the association between family income at birth and gang presence in the neighborhood at age 15 was weaker for Black than White families. Our race-stratified models also showed an inverse effect of family income at birth on gang presence in the neighborhood at age 15 in White but not Black families. *Conclusions:* Diminished returns of family income at birth on neighborhood safety and social disorder may be a mechanism that contributes to racial health disparities in higher socioeconomic status and also poor outcomes for Black families across socioeconomic status (SES) levels. That is, a smaller protective effect of family income on changing the real lives of Black compared to White families may be one of the mechanisms by which health is worse than expected in Black families, across the entire SES spectrum. The health, behavioral, and developmental disparities are not only due to the racial gap in SES but also diminishing returns

of socioeconomic status indicators such as family income for racial minorities. Research should study contextual and structural factors that reduce Black families' ability to mobilize their human capital and secure health outcomes in urban settings.

Keywords: African Americans; Blacks; maternal health; socioeconomic status; socioeconomic position; birth outcomes; low birth weight

1. Introduction

Socioeconomic status (SES), particularly family income, is a strong social determinant of health (SDOH) [1]. Individuals with higher SES and higher family incomes show better health [2]. Higher family income is also among the strongest SES and SDOH indicators [3]. There are, however, variations in the effects of SES and SDOH indicators depending on social context and demographic factors [4]. One of the mechanisms by which family income improves population health is through enhancing the social environment [5–11]. Family income is a proxy of living place, and individuals with higher family income live in better neighborhoods [12,13]. In fact, some evidence suggests that place may partially mediate the effect of family income on desired outcomes [11,14–16]. This is, in part, because better neighborhoods mean lower stress, better access to health choices, and less social disorder such as exposure to gang and crime [17–20]. These are very important given social disorder is a risk factor for poor health across domains [21–24].

The health effects of SES and SDOH indicators such as family income depend on race and place, suggesting a complex interplay between race, place, and resources on shaping populations' and individuals' health outcomes [25]. Some research has shown that the health effects of place may also differ for White and Black families [23]. Other research has shown that family SES may have stronger effects on changing the living conditions for Whites than Blacks [26,27]. Similarly, family SES may have a larger effect on reducing exposure to stress for White than Black families and their youth [28]. Finally, family SES may be associated with a reduced level of protection of Black compared to White youth against environmental risk in the neighborhoods [28,29], schools [30,31], and families [32].

A growing body of research has suggested that SES and SDOH indicators, such as family income at birth, may be less protective for Black than White families [33,34]. Although historically neglected, attention has been recently given to the contributions of Minorities' Diminished Returns (MDRs) as a source of racial health disparities and inequalities in middle-class Black families, particularly in urban settings [33,34]. According to the MDRs framework, SES and SDOH indicators, particularly family income at birth, show weaker effects and generate fewer outcomes for Black than White families [33–45]. As a result of these MDRs, worse than expected health outcomes can be observed for Black families across all SES and income levels, a pattern not seen for White families [46–48]. While family SES generates fewer health outcomes across domains for Black than White individuals [49,50], we are not aware of any longitudinal studies that explore differential effects of family income (e.g., MDRs) on gang presence in the neighborhoods several years later. In some studies, family income and other SES indicators showed weaker effects on socioeconomic status for Black relative to White adults [27,51]. However, these studies were cross-sectional, focused on other aspects of their social environment and not gang presence in the neighborhood [28,30,31,52,53]. Thus, there is still a need for additional longitudinal studies on MDRs of family income at birth on future gang presence in the neighborhood years later.

Aims

Built on the MDRs literature [33,34], this study was performed with two aims: (1) to investigate the effect of family income at birth on gang presence in the neighborhood at age 15 and (2) to compare the effect of family income at birth on the future gang presence in the neighborhood between Black and White families. One hypothesis was an inverse association between family income at birth

and gang presence in the neighborhood at age 15 (Hypothesis 1), meaning that higher SES of the family at birth would be associated with lower gang presence in the neighborhoods that they live in. Another hypothesis was a weaker protective effect of family income at birth on future gang presence in the neighborhood for Black than White youth (Hypothesis 2). If our hypothesis 2 gets supported, then Black families live a poor social environment, regardless of their income. This would then explain why middle-class Black families who already access SES resources still have poor health, to a level that is disproportionate to their income, class, and SES.

2. Methods

2.1. Design and Setting

This longitudinal study used 15 years of follow up of a national urban sample of families with a newborn. The Fragile Families and Child Wellbeing Study (FFCWS) was conducted from 1998 to 2016. The FFCWS is an ongoing longitudinal study. However, the most current wave of data collection occurred in the year 2016. The FFCWS has followed racially diverse and economically fragile families from the birth of their newborns for 15 years when the child is 15 years old. A full description of the FFCWS sampling, design, and methodology of the study are available elsewhere [54]. Here a brief description of the FFCWS sample, sampling, and methods is provided.

2.2. FFCWS Sample and Sampling

The FFCWS recruited economically challenged families with newborns. These births were selected from 20 US cities in which the population was 200,000+ people. The FFCWS has used a random sample of urban families. This, however, included an oversampling of non-married and Black and Hispanic couples [54]. As such, while not all families were unmarried and economically challenged, most families were unwed and were experiencing economic challenges. Most births in the FFCWS were non-marital, low SES, and racial minorities. As a result, the sample overall reflects the economically challenged and fragile families. Despite a random sample, this national sample is non-representative of the U.S. general population. The baseline sample size of the FFCWS was composed of 4898 families. In the current analysis, only 2919 individuals were included. This sample was followed from birth to age 15 and had complete data on all our variables including race, family income at birth, maternal education, family structure at birth, child gender, maternal age at birth, and gang presence in the neighborhood at age 15.

2.3. Study Variables

2.3.1. Independent Variable

Household income level was measured as a continuous measure (annual income divided by US dollars). The current study used this variable as a categorical variable with 0 for income lower and 1 for income higher than mean income of the families at birth (the mean income used as a cutoff point is \$22,500). In this study, an income of \$22,500+ is not an indicator of high income but higher than average income in the sample.

2.3.2. Dependent Variable

Our outcome was gang presence in the neighborhood at age 15, which was measured using the following item. When the child was 15 years old, parents were asked if they agree with the statement, "Gangs are a problem in this neighborhood". Responses were from 0 (strongly disagree) to 3 (strongly agree). This variable was treated as a binary outcome with 1 reflecting presence of a gang in the neighborhood.

2.3.3. Covariate

Youth gender, maternal age at childbirth, family marital status, and maternal education at baseline were the study covariates. Youth gender was a dichotomous variable: 1 for female and 0 for male. Maternal age at birth was a continuous measure and reported by the mother. Family structure was a dichotomous variable: married = 1, non-married = 0. Maternal educational attainment at birth of newborn (wave 1) was a four-level variable: (1) “less than high school”, (2) “high school completed”, (3) “some college education”, and (4) “college completed”.

2.3.4. Moderator

Race, the moderator, was self-identified by the mother. This variable was a dichotomous variable: Blacks = 1, Whites = 0. All participants were non-Hispanic.

2.4. Statistical Analysis

SPSS 22.0 (SPSS Inc., Chicago, IL, USA) was used for the data analysis. To describe the sample, and to conduct the univariate analyses, frequency (%) and mean (standard deviation) were reported for categorical and continuous measures. For the multivariable analysis, we used a series of nested logistic regression models. First, we ran models in the overall sample, and then we ran models specific to race. For aim 1, Model 1 was performed. For aim 2, three other models were run. In these models, gang presence in the neighborhood at age 15 was the dependent outcome; higher than average family income at birth (>\$22,500 per year) was the independent variable. Model 1 only included the main effects. Model 2 included two interaction terms between race and family income and maternal education at birth. Model 3 and Model 4 tested the same models in White and Black families. Regression coefficient, standard error (SE), their 95% confidence intervals (95% CI), and their *p*-values were reported.

2.5. Ethics

The FFCWS study protocol and ethics were approved by the Institutional Review Board (IRB) of Princeton University. Mothers (and fathers, if present) provided written informed consent. Youth provided assent at age 15. All the FFCWS data were collected, stored, and analyzed anonymously. Respondents received some financial compensation for their participation.

3. Results

3.1. Descriptive Data

This study included 2919 families who were either Black ($n = 2143$) or White ($n = 776$). All these families were followed from birth to the time that their child was 15 years old. Thus, all of these families had data on demographics, SES at wave 1, as well as gang presence in the neighborhood when the youth was at age 15.

Table 1 shows a summary of the descriptive statistics of the sample overall and by race. Most White and Black families were composed of married and unmarried couples. Maternal age, educational attainment, and family income were all significantly lower in Black than White families. Black families had higher odds of gang presence in the neighborhood when the youth was at age 15.

Table 1. Descriptive overall and by race ($n = 2919$).

| | All | | White | | Black | |
|---|----------|------|----------|-------|----------|-------|
| | <i>n</i> | % | <i>n</i> | % | <i>n</i> | % |
| Race | | | | | | |
| White | 776 | 26.6 | 776 | 100.0 | | |
| Black | 2143 | 73.4 | | | 2143 | 100.0 |
| Gender | | | | | | |
| Male | 1541 | 52.8 | 407 | 52.4 | 1134 | 52.9 |
| Female | 1378 | 47.2 | 369 | 47.6 | 1009 | 47.1 |
| Married ^{*a} | | | | | | |
| Not | 2200 | 75.4 | 333 | 42.9 | 1867 | 87.1 |
| Yes | 719 | 24.6 | 443 | 57.1 | 276 | 12.9 |
| Maternal education at birth ^{*a} | | | | | | |
| Less than college | 1794 | 61.5 | 297 | 38.3 | 1497 | 69.9 |
| College graduate | 1125 | 38.5 | 479 | 61.7 | 646 | 30.1 |
| Household income at birth ^{*a} | | | | | | |
| Less than 22,500 | 1528 | 52.3 | 208 | 26.8 | 1320 | 61.6 |
| 22,500+ | 1391 | 47.7 | 568 | 73.2 | 823 | 38.4 |
| Gang presence in the neighborhood at age 15 ^{*a} | | | | | | |
| No | 1479 | 50.7 | 473 | 61 | 1006 | 46.9 |
| Yes | 1440 | 49.3 | 303 | 39 | 1137 | 53.1 |
| Mean | | SD | Mean | SD | Mean | SD |
| Maternal age at birth ^{*b} | 25.47 | 6.17 | 27.84 | 6.57 | 24.62 | 5.79 |

* $p < 0.05$ (Blacks compared to Whites); ^a Pearson Chi-square test; ^b Independent sample *t*-test.

3.2. Pooled Sample Models

Table 2 shows the main results of two linear regressions that were estimated in the overall sample to test the effect of family income and maternal education at birth on gang presence in the neighborhood at age 15. Model 1, which did not include our interaction term, showed that higher maternal education but not family income at birth was associated with gang presence in the neighborhood at age 15 in the overall sample. Model 2, which included two interaction terms between race and maternal education and family income at birth, showed an interaction between family income at birth and race, suggesting a larger effect of higher than average family income at birth on gang presence in the neighborhood at age 15 for Whites than Blacks.

Table 2. Linear regression models with gang presence in the neighborhood at age 15 as the outcome in the overall sample.

| | Model 1 (Main Effects) | | | | Model 2 (M1 + Interaction) | | | |
|--|------------------------|--------|------|----------|----------------------------|--------|------|----------|
| | OR | 95% CI | | <i>p</i> | OR | 95% CI | | <i>p</i> |
| Race (Black) | 1.55 | 1.29 | 1.88 | 0.000 | 1.15 | 0.84 | 1.57 | 0.391 |
| Mother's age at birth (years) | 1.01 | 1.00 | 1.02 | 0.138 | 1.01 | 1.00 | 1.03 | 0.091 |
| Gender (female) | 0.96 | 0.83 | 1.12 | 0.617 | 0.96 | 0.83 | 1.11 | 0.557 |
| Family married at birth | 0.93 | 0.75 | 1.16 | 0.506 | 0.97 | 0.78 | 1.21 | 0.786 |
| Maternal education (college) | 0.77 | 0.65 | 0.92 | 0.004 | 0.72 | 0.51 | 1.00 | 0.050 |
| Household income at birth (\$22,500+) | 0.87 | 0.74 | 1.03 | 0.107 | 0.62 | 0.43 | 0.89 | 0.008 |
| Maternal education (college) × Race | - | - | - | - | 1.10 | 0.75 | 1.61 | 0.619 |
| Household income at birth (\$22,500+) × Race | - | - | - | - | 1.52 | 1.03 | 2.26 | 0.037 |
| Constant | 0.66 | | | 0.034 | 0.83 | | | 0.387 |

Overall models are statistically significant; outcome: gang presence in the neighborhood at age 15; CI: confidence interval.

3.3. Models by Race

Table 3 presents the statistics for logistic regressions that were performed to assess the association between family income at birth and gang presence in the neighborhood at age 15 for racial groups.

Model 3 (Whites) and Model 4 (Blacks) showed an association between family income at birth and gang presence in the neighborhood at age 15 for Whites but not Blacks.

Table 3. Logistic regression models with gang presence in the neighborhood at age 15 as the outcome across races.

| | Model 1 (White) | | | Model 2 (Black) | | |
|---------------------------------------|-----------------|-----------|----------|-----------------|-----------|----------|
| | OR | 95% CI | <i>p</i> | OR | 95% CI | <i>p</i> |
| Mother's age at birth (years) | 1.00 | 0.97 1.03 | 0.961 | 1.02 | 1.00 1.03 | 0.055 |
| Gender (female) | 0.90 | 0.67 1.20 | 0.458 | 0.97 | 0.82 1.16 | 0.764 |
| Family married at birth | 0.86 | 0.59 1.26 | 0.435 | 1.05 | 0.80 1.39 | 0.716 |
| Maternal education (college) | 0.80 | 0.56 1.15 | 0.222 | 0.77 | 0.63 0.94 | 0.012 |
| Household income at birth (\$22,500+) | 0.67 | 0.46 0.96 | 0.031 | 0.93 | 0.77 1.12 | 0.460 |
| Constant | 1.11 | | 0.770 | 0.87 | | 0.466 |

Overall models are statistically significant; outcome: gang presence in the neighborhood at age 15; CI: confidence interval.

4. Discussion

Two findings were observed: (a) Overall, higher maternal education but not family income at birth reduced gang presence in the neighborhood at age 15, and (b) higher than average family income at birth was associated with living in a better future social environment for Whites but not Blacks. This was also supported by a statistical interaction between race and family income at birth showing that the protective effect of income at birth is larger for White than Black families.

We found that while higher level of income means living in areas with high social safety for White families, Black families live in poor social environments if they have lower or higher than average income levels. This is an indicator of MDRs of family income at birth on their future social environment at age 15. Previously, MDRs of family SES indicators such as income, maternal education, and household income are reported for impulsivity [39], school achievement [50], and school bonding [55]. Similarly, Black kids from higher SES families remain at high risk of obesity [56], anxiety [57], depression [40], as well as chronic diseases [35] such as ADHD [37], and asthma [58]. That is, Black children are not much protected from their family SES, which is in line with the MDRs.

The patterns reported here may propose a behavioral explanation for why MDRs exist for children, youth, and adults. Our study suggests that MDRs that are commonly observed in adults can be traced back to childhood [58], adolescence [39,56,59], and even at birth. As a result of such an unequal start of the life-course, family SES, family income, and parental education do not equally translate to health outcomes for Blacks and Whites over the life-course.

The results reported here, and those shown by other studies, propose that MDRs are not specific to any specific health outcomes. This observation suggests that upstream socialization processes that accompany race, also called racism, are responsible for a systemic difference between Whites and Blacks in their ability to gain health and well-being from family income and other resources [33,34]. These patterns may not even be specific to race, as they are also shown for ethnicity [44,60,61], sexual orientation [62,63], nativity [42], and place [29]. Thus, it is not just racism but any form of marginalization that reduces health gain that follows SES.

MDRs are commonly reported by other scholars. For example, Farmer and Ferraro published work on MDRs of education on self-rated health [64]. Shapiro and Oliver have published studies on the inequalities in wealth distribution as a consequence of unfair social policies such as Jim Crow and redlining [65,66]. Along the same lines, Hamilton and Darity have conducted several studies documenting the enormous wealth gap in the United States [67]. Other scholars have also published work on MDRs [68]. Hudson et al. showed a reduced gain of SES in the lives of Blacks [69–71]. Wilson, Thorpe, and LaVeist showed that income may differently reduce discrimination for White but not Black

people [72]. Navarro's work argued that living conditions and health are not a function of race or class (SES) but their intersection and interaction [73–75].

MDRs are attributed to several mechanisms and social processes [33,34]. First, they are due to structural and environmental factors [33,34]. Higher SES Black people have a higher tendency than their White counterparts with the same SES to be exposed to environmental hazards [46]. Across all SES levels, members of Black families, including children, youth, and adults, are more likely to eat a worse diet [76], have a sedentary life style [77], smoke cigarettes [48], drink alcohol [61], or be depressed [40], suicidal [47], anxious [57], or obese [38,56], and have chronic diseases [58].

Another mechanism behind MDRs is the higher psychosocial tax that Black families pay for upward social mobility [78]. Blacks report high levels of stress at all levels of social mobility [78]. Simultaneously, Black youth and adults from higher SES families, including those with high levels of income, report more stress associated with race and discrimination [79]. Blacks and Whites with the same level of family SES do not have similar wealth, which would have operated as a buffer and protected Blacks if life conditions became out of hand [51,65,66]. As Blacks are newer to their class, a single SES measure such as income or education may not have less effects on enhancing Black families' living conditions [27].

4.1. Implications

Our findings propose policy solutions that can help reduce health disparities in the United States. Previous policies have mainly tried to reduce inequalities in outcomes to inequalities in access to resources and have assumed that the elimination of inequalities in access would result in the elimination of inequalities in outcomes. Our findings, however, suggest that given the MDRs, some of the racial inequalities are not because of unequal access but the systemic disadvantage of Blacks and other racial groups in the society. Without addressing MDRs, solely enhancing access to SES resources would not be enough for the elimination of health disparities. Thus, MDRs may contribute to the advancement of policies to reduce health disparities [80–84].

4.2. Limitations and Future Research

The study has a few limitations. First, we did not have balanced samples of Blacks and Whites. The sample was not random. Other risk factors of poor diet such as health literacy and availability of healthy choices and schedule of work and occupation of the parents were not measured. The results are not generalizable to the total population of White and Black families. The FFCWS has predominantly recruited economically fragile participants from large cities. Another limitation was that we used a single-item measure for gang presence in the neighborhood. There was also no information on gang activities, chronicity, and severity of gang presence and other social disorders. In addition, this study has not matched Black and White participants for SES. Whites still have a higher wealth at each level of income compared to Blacks. The results could be validated by neighborhood-level factors. Furthermore, this paper was relatively limited in scope as well as number of constructs that it included. For example, the presence of gangs does not provide a detailed look at the problem of gangs in the neighborhood. We also did not study paternal variables. For example, we did not investigate how presence of father or paternal education would influence our outcome of interest. In addition, family stability and composition are not identical between White and Black families. A negative change to the family structure may be more likely in Black families who are married. Thus, future research should also study how marital status, family stability, and dynamics change over time. Finally, size of the family is another unmeasured confounder. Larger families may experience more economic challenges with the same level of income, so future research may also include poverty level that adjusts for family composition and household size.

5. Conclusions

In a national sample of U.S urban areas, Black and White families differ in how their income at the time of birth of their child changes their social environment 15 years later. We observe poor social environment for Black families across all income levels. For White families, social disorder of the neighborhood at age 15 is a function of their family income when the child was born. That means gang presence in the neighborhood when the child is at age 15 is at its lowest level for White families that have income higher than average level. For Blacks, however, social disorder in the neighborhoods always remains high, regardless of family income.

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