

Black-White Differences in the Association between Maternal Age at Childbirth and Income

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Abstract

Background: Previous research has documented bidirectional associations between age at childbirth and socioeconomic status (SES) among mothers. Built on the Marginalization-related Diminished Returns (MDRs) theory, this study compares the association between maternal age at childbirth and income between non-Hispanic Blacks and non-Hispanic Whites.

Methods: We used the data of the Fragile Families and Child Well-being Study (FFCWS), a longitudinal study from 1998 to 2016 in the United States (US). This study included 2922 women who were non-Hispanic White (n=776) or non-Hispanic Black (n=2146). Maternal age at childbirth was the independent variable, and income was the dependent variable. Educational attainment, marital status, delivery characteristics, car ownership, and welfare dependence were the covariates. For data analysis, linear regressions were applied.

Results: Higher maternal age at childbirth was associated with higher income (adjusted $b=0.30$). We found a significant interaction between maternal age at childbirth and race on income, suggesting that the positive association between mothers' age at childbirth and income was weaker for non-Hispanic Blacks than non-Hispanic Whites ($b=-1.14$, 95% CI=-1.50, -0.77).

Conclusion: Postponing childbirth may have a smaller economic return for non-Hispanic Black women, which is in line with Marginalization-related Diminished Returns theory. Diminished returns of postponing reproduction may be a result of social stratification and structural inequalities that separate the lived experience of Blacks and Whites in the United States.

Keywords: Ethnic groups, Income, Maternal age, Childbirth

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1. Introduction

Maternal age at childbirth is considered as one of the most important determinants of health and wellbeing for both the mother and her child (1). Although delaying childbearing until late reproductive ages can be dangerous, childbirth in early adulthood has also significant adverse health outcomes for children and their mothers (2). In addition, older motherhood compared with younger motherhood can be related to more readiness for pregnancy (3), so much so that women who postpone childbearing in early adulthood are more ready to have children and are less confounded (2). In summary, women bear their first child at a later age tend to have more positive parenting behaviors such as maternal protectiveness and mother-child closeness, better family functioning, higher family stability, and a more steady economic status (4). These factors result in better child development compared with a child born from a younger mother.

and income) of parents is considered as a significant identifier of childbearing, birth consequence, and also later health and well-being of the child of an older mother (2). In industrial countries such as the United States (US) and the United Kingdom (UK), early childbearing is related to socioeconomic disadvantage and less desirable consequences for both parents, especially mothers (5). Therefore, it is important to consider the exact socioeconomic differentials in maternal age at the birth of their first child (6). SES influences parenthood timing, such that lower SES is associated with sooner pregnancy in women (6). Previous research has indicated that in industrial countries, women with higher levels of education start childbearing at later ages (7). Improved recruitment chances for women are thought to develop the returns to higher education and so enhance costs of early marriage and childbearing for highly-educated women to a higher degree than for women with lower education (8).

With over three million infants of various races/ethnicities born each year, the US has one of the most

Socioeconomic status (SES) (such as education

racially and ethnically varied societies, (9). However, in recent decades in the US, improved SES, including education attainment and income, came with maternal age at childbirth being raised (5). Significant differences in the timing of childbearing was stable among various racial groups (10). In fact, earlier childbearing tends to be more centralized in the lives of black women compared with White women (11). Between 2006 and 2010, about 33% of black women and only 14% of White women in their reproductive period had a child before their 20th birthday (12). According to the latest statistics, the mean maternal age of non-Hispanic black women (24.8 years) remains significantly lower than non-Hispanic White women (27.4 years) (13). However, the reason for such differences remains largely unknown.

According to the Marginalization-related diminished returns theory (MDR), racial and ethnic minorities do not gain identical health advantages from SES as White Americans (14, 15). In fact, in this theory, SES indicators tend to display lower effects among non-Hispanic Blacks versus non-Hispanic Whites in terms of health and health behaviors (14). Black Americans attain less health advantages compared with White Americans for a broad range of SES resources, including education (16) and income (17). For instance, high SES (educational attainment and income) better protects Whites than Blacks against drinking (18), depressive symptoms (19), suicidal thoughts (20), chronic medical conditions (19), and high body mass index (BMI) (21). Although research has shown the direct association between maternal age and income (5), less is known about the differential associations between maternal age and income across race/ethnic groups in the US.

2. Objectives

The maternal age and income are lower in non-Hispanic Black women compared with non-Hispanic White women, and research in this area is limited; therefore, the present study explored MDRs in the association between maternal age at childbirth and income through comparing non-Hispanic Black women and non-Hispanic White women in a national sample in the US. We hypothesized that there would be a weaker association between maternal age at childbirth and income for non-Hispanic Black in comparison with non-Hispanic White mothers.

3. Methods

The Fragile Families and Child Wellbeing Study (FFCWS), a longitudinal study (1998-2016), evaluates

economically fragile families. Although detailed information about sampling and methods of the FFCWS is accessible elsewhere (22), we concisely describe the methods of FFCWS here.

Sample

From urban families of 20 US cities, 200,000 participants or more were enrolled randomly in FFCWS. Non-married and Black and Hispanic couples have been oversampled in FFCWS (22). The majority of the FFCWS samples were of minority families and not married, and had low SES. Therefore, the current national sample is not a representative of the US public. 2407 Black families, 1354 Hispanic families, and 894 White families were the principle sample of the FFCWS.

The current analysis consisted of non-Hispanic Black and non-Hispanic White women that had data on their SES (such as educational attainment and income) and maternal age at childbirth. The analytical sample contained 2229 women, including 776 non-Hispanic White and 2146 non-Hispanic Black women.

The main dependent variable in our study was income which was measured as a continuous variable, with a higher score indicating better SES. Covariates in this study included educational attainment, marital status, income from welfare, income from disability, car ownership, two delivered babies, and low birth weight. Educational attainment of women was measured as a continuous variable: (a) lower than high-school, (b) completed high school, (c) some college education, and (d) completed college studies. Also, marital status was a dichotomous factor reported by women (married 1, all other situations 0). All other covariates were also measured as dichotomous variables (no 1, yes 0). Income from welfare, income from disability, and owning a car were all measured using self-reported data. Maternal age at childbirth was the main independent variable in the present study measured as a continuous variable. Finally, race/ethnicity was the central moderator used as a dichotomous variable, with non-Hispanic White=0 (reference category) and non-Hispanic Black=1.

SPSS version 22.0 (SPSS Inc., Chicago, IL, USA) was used for data analysis. Frequency (%) and mean (standard deviation) were reported for descriptive characteristics. Moreover, independent sample t-test and Chi-square test were applied to evaluate the differences of descriptive characteristics between non-Hispanic White and non-Hispanic Black women. Pearson correlation test was performed for bivariate

analysis throughout the sample. In addition, two linear regression models were conducted on the overall sample. In both models, income was the dependent variable, maternal age at childbirth was the independent variable, race was the focal moderator, and socio-demographic variables were controls. *Model 1* only contained the main effects and *Model 2* included the interaction between maternal age at childbirth and race/ethnicity. We reported b, SE, CI, and P value. P values<0.05 were considered significant.

The FFCWS study protocol was approved by the Princeton University Institutional Review Board (IRB). Written informed consent was provided by all participants after being informed of the purpose of the study. Data were collected, kept, and analyzed namelessly. Furthermore, respondents were financially compensated.

4. Results

This study was comprised of 2922 non-Hispanic

White (n=776) or non-Hispanic Black (n=2146) women. Table 1 provides the descriptive statistics of the study variables in the pooled sample and for each race. Maternal age at childbirth, educational attainment, household income, income welfare, and owning a car were higher in non-Hispanic Whites. Also, most White women were married in contrast to most Black women. Disability income and Low Birth Weight (LBW) children were higher in Black women.

Table 2 shows the results of the bivariate correlations in the overall sample. LBW showed a mild and negative association with household income (r=-0.07). Also, there was a moderate positive correlation between household income and car ownership (r=0.40), marriage (r=0.53), education (r=0.54), and maternal age (r=0.37). A moderate negative relationship was further observed between income welfare (r=-0.39) and Black race (r=-0.44) and household income.

Table 3 indicates the findings of the two linear

Table 1: Descriptive statistics in the pooled sample and by race

Characteristics	All		White		Black	
	Mean	SD	Mean	SD	Mean	SD
Age at Childbirth (years) ^{*,a}	25.47	6.17	27.84	6.57	24.62	5.79
Education ^{*,a}	2.22	1.00	2.82	1.06	2.02	0.90
Household Income (USD 1000) ^{*,a}	33.59	33.24	58.06	42.05	24.75	23.90
	n	%	n	%	n	%
Race						
White	776	26.6	100	26.6	-	-
Black	2146	73.4	-	0	2146	100
Married ^{*,b}	719	24.6	443	57.1	276	12.9
Income-Welfare ^{*,b}	1108	38.2	150	19.6	958	44.9
Income-Disability ^{*,b}	278	9.6	57	7.4	221	10.4
Own a Car ^{*,b}	1309	49.8	570	80.5	739	38.5
Delivered 2 Babies	63	2.2	19	2.4	44	2.1
Low Birth Weight ^{*,b}	344	12.1	57	7.5	287	13.8

* P<0.05 for comparison of Blacks and Whites; ^a Independent sample t test; ^b Chi square test

Table 2: Bivariate correlations in the overall sample

Characteristics	1	2	3	4	5	6	7	8	9	10
1 Race (Black)	1	-0.23**	-0.35**	-0.45**	0.22**	0.04*	-0.37**	0.08**	-0.01	-0.44**
2 Age at Childbirth		1	0.44**	0.43**	-0.18**	0.05**	0.28**	0.01	0.03*	0.37**
3 Education			1	0.48**	-0.33**	-0.06**	0.44**	-0.09**	0.01	0.54**
4 Married				1	-0.34**	-0.02	0.42**	-0.10**	0.01	0.53**
5 Income-Welfare					1	0.02	-0.29**	0.04*	-0.00	-0.39**
6 Income-Disability						1	0.00	0.02	0.02	-0.03
7 Own a Car							1	-0.10**	0.03	0.40**
8 LBW								1	. ^c	-0.07**
9 Twin (n babies)									1	0.02
10 Income										1

LBW: Low Birth Weight; Pearson Correlations were used; * P<0.05; ** P<0.01.

Table 3: Regression model with baseline household income as the outcome

Characteristics	Model 1				Model 2			
	Main Effects				Model 1+Interactions			
	B	SE	95% CI		B	SE	95% CI	
Race (Black)	-12.03 **	1.32	-14.62	-9.44	17.54**	4.99	7.75	27.33
Education	9.65**	0.66	8.36	10.94	9.28**	0.66	7.99	10.56
Married	16.60**	1.57	13.52	19.68	15.11**	1.58	12.02	18.20
Income-Welfare	-9.83**	1.18	-12.14	-7.52	-9.61**	1.17	-11.90	-7.32
Income-Disability	0.08	1.78	-3.42	3.57	0.16	1.77	-3.31	3.62
Own a Car	4.12*	1.22	1.72	6.52	4.60**	1.22	2.22	6.99
Low Birth Weight	-1.01	1.61	-4.17	2.15	-0.60	1.60	-3.73	2.54
Age at Childbirth (years)	0.30**	0.10	0.11	0.50	1.11**	0.16	0.79	1.44
Age at Childbirth (years) × Race	-	-	-	-	-1.14**	0.19	-1.50	-0.77

*P<0.01; ** P<0.001.

regression models in the overall sample with maternal age at childbirth as the independent variable and the household income as the dependent variable. Model 1 only comprised the main effects. Model 2 contained the main effects and an interaction term between race and maternal age at childbirth. Model 1 suggested that higher maternal age was associated with higher household income ($b=0.30$, 95% CI=0.11, 0.50, $P<0.001$), net of covariates. Additionally, in this model, Black race was associated with lower household income ($b=-12.03$, 95% CI=-14.62, -9.44, $P<0.001$). Model 2 showed a significant interaction between race and maternal age at childbirth ($b=-1.14$, 95% CI=-1.50, -0.77, $P<0.001$), proposing a weaker association between maternal age at childbirth and income in non-Hispanic Black compared with non-Hispanic White women.

5. Discussion

The present study investigated a national sample of non-Hispanic Black and non-Hispanic White women in order to evaluate Black-White differences in the association between maternal age at childbirth and income. The findings showed a weaker relationship between maternal age at childbirth and income in non-Hispanic Black than White women.

The results may be due to the MDRs (14) of postponing reproduction on upward social mobility or MDRs of income on changing the life conditions of Black women. As these findings suggest, income is lower and less dependent on the age of childbirth in non-Hispanic Black women. For non-Hispanic White women, however, income is higher on average, and postponing childbearing is associated with increased income. In statistical terms, non-Hispanic Black women are at a relative disadvantage compared to non-Hispanic White women regarding both the intercept

and slope of their income-maternal age.

Black women's age at first childbirth was significantly lower than that of White women (14). Previous studies have documented the MDRs of educational attainment (19) and income (23) on the risk of depression in non-Hispanic Blacks versus non-Hispanic Whites. In addition, the impact of educational attainment (16) and employment (24) on mortality was higher for non-Hispanic Whites compared with non-Hispanic Blacks. Also, higher educational attainment was related to lower systolic blood pressure in non-Hispanic Whites but not non-Hispanic Blacks (25). Furthermore, another study reported that high income was related to better self-rated mental health of non-Hispanic Whites unlike non-Hispanic Blacks (26).

Marginalization-related Diminished Returns (MDRs) are not specific to any age and race group. For instance, higher educational attainment among Hispanic Whites compared with non-Hispanic Whites was related to a lower frequency of alcohol drinking (27). Results of another study conducted on Black and White women indicated that Educational Attainment had a smaller effect on exercise frequency in Black women (28). In a study, an inverse relationship was reported between being employed and ever smoking in non-Hispanic Whites, but no association was reported for Hispanic Whites (29). Also, family income had a smaller effect on childhood obesity in Blacks compared with Whites (30). It was further reported that household income at birth had a stronger protective effect on subsequent youth impulsivity in Whites compared to Blacks (31).

Findings of a study on the importance of race and SES in pregnancy age of Black and White teenagers showed no significant difference during better economic times (32), which is not consistent with the results of

the current study. These differences can be attributed to age and racial differences of the samples; however, more research is required regarding this discrepancy in the field.

The precise mechanisms of the differential benefits from SES or human sources have not been fully identified; however, structural and systemic racism may have a role in these diminished returns (33). High SES increases exposure to discrimination in non-Hispanic Blacks (34). Discrimination might minimize the health advantages from SES resources and the protective effects of SES among non-Hispanic Black adults (35). In one study, non-Hispanic Blacks and non-Hispanic Whites with the same SES had nonequivalence of childhood SES, possibly explaining why high SES was less protective in adulthood period for non-Hispanic Blacks (36). Racial segregation at residential areas, schools, workplaces, and health care facilities may also play important roles in sustaining health disparities at high SES levels (37). In contexts with high neighborhood segregation, crime, and social disorder, youth and young adults may face constrained options for recreation, hence the possibility of turning to sex. Even in this context, high SES delays sex and pregnancy (32). According to Bandura's social learning theory (38), behavior is learned under the influence of what is common and observed in neighborhoods. Therefore, segregated neighborhood may be a mediator of the effects of race and SES (32). High SES non-Hispanic Blacks who are more likely to reside in predominantly Black areas may run higher risks of early childbearing compared to high SES non-Hispanic Whites. The present research did not investigate the effects of neighborhood segregation and SES, which should be considered in future research.

Previous studies have revealed that early motherhood is associated with a higher risk of economic difficulties, including lower income, welfare dependency, fewer job opportunities, and lower life quality and standards (39). Several factors contribute to these economic problems as they, have to leave their job due to maternity, have lower labor market returns or experience a lower pay, and are faced with constraints and frictions for the job search and lower job mobility (40). As a result, women who bear a child early have a lower chance of upward social mobility at least for several years, limiting their social and financial well-being (39).

The implications of our results are important for policymakers and public health officials. To plan appropriate measures, it is essential that the former be

informed of the diminished health returns of SES for racial and ethnic minorities. The objective of policies and programs should be to reduce the diminished returns of non-Hispanic Blacks as a strategy for removing health disparities. Addressing health inequalities should go beyond equating access to SES resources or reducing additional risk factors in the lives of minorities. Therefore, policies that globally increase SES indicators in the US may even spread these health inequalities. It seems that to remove the persistence of racial health disparities in the US, there is a need to extend policies ensuring that all social minority groups regardless of their race could benefit from SES resources.

Black women have poor access to opportunities regardless of the childbirth age. Addressing health inequalities should go beyond equating access to SES and address the drastically different life conditions of Black and White women. Therefore, policies and programs should decrease societal and structural obstacles that usually induce diminished returns of SES for Black families.

The current study had several limitations. First, a cross-sectional design was used; therefore, our findings should not be considered causal. Other research designs, particularly longitudinal designs, are required to examine the effect of high SES on maternal age in different racial and ethnic groups. Second, the mechanisms behind the differential effects of other SES indicators (such as educational attainment, employment, and wealth) on maternal age were not investigated. We also did not control for SES indicators such as employment and occupation type, which may have certain impacts on the maternal age of women. Third, the present study was limited to non-Hispanic White and Black women, hence the need for other ethnic groups. Despite the mentioned limitations, the present study is one of the first attempts at comparing non-Hispanic Whites and non-Hispanic Blacks for the relationship between SES and maternal age in a national sample of American women.

5.1. Conclusions

The Black-White difference observed in this study is consistent with MDRs. Racial differences in the association between maternal age at childbirth and income may reflect structural inequalities and social stratification. Policies should help equalize life conditions and access to the opportunity structure for non-Hispanic Black and White girls and women. Such changes should be made if we are to equalize the gain from the economic

and non-economic resources between non-Hispanic Black and non-Hispanic White women. In their current economic and social context, non-Hispanic Black women who delay childbirth still have low income. Preventing early childbirth in the Black community would probably result in less than expected upward social mobility both for the mother and the child.

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Conflict of Interest

The authors declared no conflict of interest.

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