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Parental Educational Attainment and Academic Performance of American College Students; Blacks' Diminished Returns

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Abstract

Background.—As suggested by the Minorities' Diminished Returns (MDR) theory, socioeconomic status (SES) systemically results in smaller outcomes for non-Whites compared to Whites. We still know very little about diminished trans-generational returns of SES resources such as parental educational attainment (PEA).

Purpose.—This cross-sectional study explored racial variation in the effect of PEA on the college students' grade point average (GPA) in the US.

Methods.—The Healthy Mind Study (HMS, 2016–2017) is a national telephone of college students in the US. The total sample was 18,072 domestic undergraduate college students who were either non-Hispanic Whites ($n = 16,718$; %92.50) or non-Hispanic Blacks ($n = 1,354$; %7.50). The independent variable was PEA. The main outcome was GPA measured using self-reported data. Age, gender, sexual orientation, transgender status, and financial difficulty were covariates. Race/ethnicity was the effect modifier. Linear regression models were used to analyze the data.

Results.—Overall, higher PEA was associated with a higher GPA, independent of all possible confounders. Race/ethnicity, however, showed a significant interaction with PEA on students' GPA, indicating a smaller positive effect of PEA on non-Hispanic Blacks compared to non-Hispanic Whites college students' GPA. Race/ethnicity stratified models also showed a larger effect for White than Black students.

Conclusions.—The boosting effect of PEA in GPA is smaller for Black compared to White college students. US should systematically reduce extra costs of upward social mobility for racial and ethnic minority families.

Keywords

educational attainment; race; ethnicity; Blacks; African Americans; socioeconomic status; academic performance; higher education

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1. Background

Educational attainment and other socioeconomic status (SES) resources are among the strongest social determinants of development and well-being both for the families and the individuals (1–3). High educational attainment of self and parents are protective against a wide range of undesired outcomes (4–6). Families in which parents have higher educational attainment are less likely to experience financial distress, stress, unemployment, poverty, poor health, behaviors, illness, mortality. As a result, one of the main family SES indicators is parental educational attainment (PEA) that has a salient protective factor for offspring (7–9). Low PEA is also a contributor to racial disparities(10–12).

Own educational attainment (13, 14) as well as PEA (15–18), however, may not generate equal outcomes across various demographic and social groups. Members of the majority and minority groups may show difference in their abilities to navigate the system and translate their education to a tangible outcome (19). As a result, the magnitude, direction, and the mechanism of the effects of own education and PEA widely varies for US sub-populations (10, 11, 20–25).

Empirical evidence has shown that own educational attainment (26–28) and PEA (10, 11, 15, 29-31) better translate to desirable outcomes for non-Hispanic Whites than non-Hispanic Blacks. For example, effects of own education on reducing smoking, drinking, diet, obesity, depression, suicidality, chronic disease, and mortality are all less significant for non-Hispanic Blacks than non-Hispanic Whites (15, 19, 26–32). There are even studies that show high SES may be associated with poor mental health of non-Hispanic Blacks; however, this pattern is better shown for males than females (21, 33–36). In a number of national studies, for male Black youth and adults, high SES was actually positively associated with depression and depressive symptoms, which is opposite of the benefits expected when improving SES (21, 33–36). These patterns may be because for non-Hispanic Blacks, high SES may reflect more contact with Whites in the workplace and school, which is linked to perceived discrimination, and this creates risk factors for several poor outcomes(35–38).

Although most of this evidence is on the effects of own educational attainment on own outcomes, some recent studies have shown similar patterns for transgenerational effects of PEA (10, 11, 15, 29, 31). In multiple studies that used data from Fragile Families and Child Wellbeing Study (FFCWS), parental economic resources including PEA showed larger effects on youth body mass index (BMI), impulsivity, and self-rated health for non-Hispanic Whites than non-Hispanic Blacks (15–18). In a very recent study, PEA better boosted educational attainment for Whites than Blacks (10). In another study, PEA better boosted mental well-being of White than Black college students(11).

A part of these inequalities in gain may be due to education quality, or labor market discrimination which is a form of institutional and structural racism (19). As society differently treats sub-populations, various social groups differ in how they can mobilize their SES resources to gain desired outcomes(39). In addition, non-Whites pay additional psychosocial and social costs for their upward social mobility than Whites (22, 23). Non-Whites are also required to exert more effort to climb the social ladder, in comparison to

Whites. Given the history of slavery and Jim Crow laws, and residual racism in terms of segregation and discrimination in almost all US institutions, particularly education and labor market, it goes to follow that educational attainment better generates employment, increased income, and other desired outcomes for non-Hispanic Whites than non-Hispanic Blacks. As a result, the very same educational attainment brings more employment opportunities and better life conditions for Whites than Blacks(19). Blacks are more likely to gain education in low resource schools in inner cities and poor communities. Blacks are also frequently discriminated against inside (11) and outside (40) schools, which causes several problems. Discrimination reduces the gains that are expected to follow SES resources such as educational attainment (24). All of these processes reduce the effects of own education and PEA on positive outcomes for minorities, particularly non-Hispanic Blacks, compared to non-Hispanic Whites.

1.1. Aims

To explore whether there is any racial differences in transgenerational effects of PEA on academic performance of American college students, we used a national data set to compare the effect of PEA (i.e., defined as the highest education level of parents in the household) on non-Hispanic Black and non-Hispanic White college students' GPA in the US.

2. Methods

2.1. Design and Setting

The Healthy Mind Study (HMS) is an online (web-based) mental health survey of American college students. A web-based survey, the HMS monitors the mental health of undergraduate and graduate American college students. The survey gathers information on demographic factors, socioeconomics, stress, mental health needs, stigma, and mental health service utilization. Since 2007, HMS has collected data from 175,000 respondents about 150 US colleges and Universities (41–47).

2.2. Sample and Sampling

Participating colleges provide the HMS team with a random sample of enrollees. Large colleges provide a sample of 4,000 college students. Smaller colleges provide all of their enrollees (census). Schools with graduate students include samples from both undergraduate and graduate levels. Students are invited to participate in the HMS via email. Participants who do not participate receive up to three reminders to increase their participation in the survey. Follow up (reminder) emails are being sent with two to four days interval. Each email invitation contains a URL that directs the student to the survey website (questionnaire). Inclusion criteria in the current analysis was college students (enrolled for a master's degree) and being either non-Hispanic White or non-Hispanic Blacks. The exclusion criteria were international student and being enrolled for an associate degree or graduate studies. The analytical sample of this study was 18,072 domestic undergraduate college students who were either non-Hispanic Whites ($n = 16,718$; %92.50) or non-Hispanic Blacks ($n = 1,354$; %7.50). To exclude *international students*, the following item was used: "Are you an international student?" Responses were yes = 1 and no = 0. To limit the sample to undergraduate students, *academic levels were measured by asking*

participants: “What is your field of study?” The responses included undergraduate (pre-business, pre-health, pre-law), graduate (dentistry, law, medicine, social work), natural sciences or mathematics, social sciences (economics, psychology, etc.), humanities (history, languages, philosophy, etc.), architecture or urban planning, art and design, business, education, engineering, music, theatre, or dance, nursing, pharmacy, public health, and public policy. We excluded individuals who were enrolled in an associate or graduate level degree.

2.3. Data Collection

As a web-based survey, HMS applies three standard survey modules to all US college campuses: 1) demographic data, 2) mental health data, and 3) mental health service utilization data. This analysis included the following variables: race/ethnicity, Age, gender, sexual orientation, transgender status, and financial difficulty, PEA, and GPA. Age was a continuous measure. Gender was a dichotomous variable (female=1, male =0). Sexual orientation was asked using the following item: Transgender status was determined by asking participants to report their sex at birth (“What was your sex at birth?”) and the gender that they identified with at the time of survey.

Race/Ethnicity.—In HMS, race/ethnicity was measured as self-identified. Race / ethnicity in the current study was a dichotomous variable (non-Hispanic Blacks =1, non-Hispanic Whites =0).

Parental Educational Attainment (PEA).—The highest level of parental education was measured as PEA (independent variable). PEA was measured using the following single item measure: “What is the highest level of education completed by your parents or stepparents?” Responses included “1) 8th grade or less, 2) 9th—12th grade but no high school degree, 3) high school degree, 4) some college education but no college degree, 5) associate degree, 6) bachelor’s degree, and 7) graduate degree”. PEA was treated as an interval measure that ranged from 1 to 7, with a higher score indicating higher parental educational attainment.

Financial Distress.—Financial distress was measured using the following single item: “How would you describe your financial situation right now?” responses included 1) always stressful, 2) Sometimes stressful, 3) often stressful, 4) never stressful, and 5) rarely stressful. This variable was treated as a numerical variable with a range from 1 to 5, with a higher score indication worse SES (more financial difficulties).

Grade Point Average (GPA).—Participants were asked “What is your current overall GPA?” The answers were “1) D+ or below, 2) C-, 3) C, 4) C+, 5) B-, 6) B, 7) B+, 8) A-, and 9) A, and 10) A+”. GPA was operationalized as an interval variable, ranging from 1 to 10, with a higher score reflecting a higher grade (academic success).

2.4. Data Analysis

We used the Stata 15.0 statistical package for our data analysis. Frequency (%) and mean and standard deviation (SD) were reported for descriptive purposes. For bivariate analysis, to

compare non-Hispanic Black and non-Hispanic White college students, we used Chi square and independent samples t test. For multivariable analysis, we ran four linear regression models. First, we ran two linear multivariable regressions in the pooled sample. *Model 1* only included the main effects of PEA, race/ethnicity, and study covariates. *Model 2* also included the race/ethnicity by PEA interaction term. Then, we ran race/ethnic -stratified models (*Model 3* in non-Hispanic Whites and *Model 4* in non-Hispanic Blacks). In all models, GPA was the outcome variable, and PEA was the predictor variable. Gender, age, sexual status, transgender status, and financial distress were covariates. Unstandardized regression coefficients (b), SE, 95% Confidence Intervals (CIs), and p values are reported.

2.5. Ethical Aspect

The HMS study protocol is approved by the University of Michigan (UM) Institutional Review Board (IRB). The study has a Certificate of Confidentiality (COC) from the National Institutes of Health (NIH) to protect its participants. All participants gave a written informed consent.

3. Results

3.1. Descriptives

This analysis included 18,072 domestic undergraduate college students who were either non-Hispanic Whites ($n = 16,718$; %92.50) or non-Hispanic Blacks ($n = 1,354$; %7.50). Table 1 describes the pooled sample, as well as by race/ethnicity (Table 1).

As Table 1 shows, non-Hispanic Black and non-Hispanic White college students differed in age, gender, financial distress, PEA, and GPA. Compared to non-Hispanic White students, non-Hispanic Black students were older, were more likely to be females, had more financial difficulty, and reported a lower PEA and GPA (Table 1).

3.2. Linear Regressions in the Overall Sample

Table 2 shows the results of the two linear regression models, both in the overall sample. *Model 1 (Main Effect Model)* showed a positive effect of PEA on GPA. *Model 2 (Interaction Model)* showed an interaction between race/ethnicity and PEA on GPA, suggesting a weaker boosting effect of PEA on GPA for non-Hispanic Black compared to non-Hispanic White college students (Table 2).

3.3. Race/Ethnic -Specific Linear Regression Models

Table 3 depicts the results of two linear regression models that were specific to each race/ethnicity. *Model 3* and *Model 4* showed significant associations between PEA and GPA for non-Hispanic Whites and non-Hispanic Blacks, however, the magnitude of the effect of PEA on GPA was larger for non-Hispanic Whites than non-Hispanic Blacks (Table 3).

4. Discussion

We found an overall positive effect of PEA on GPA among American college students. We also found evidence suggesting that Black-White variations exist in the boosting effect of

PEA on college students' GPA. While both non-Hispanic White and non-Hispanic Black college students showed a GPA gain from their PEA, this gain was significantly larger for non-Hispanic White relative to non-Hispanic Black college students.

These findings are similar to what we already know regarding the diminished returns of SES indicators for non-Hispanic Blacks (10, 11, 19, 26, 29–32, 38, 48, 49) and other racial and ethnic groups (50, 51). Such effects are documented within individuals and across generations, and hold for age groups, SES resources, populations, cohorts, and outcomes. Although most of the existing literature is on diminished returns within individuals (one generation), this study is probably most relevant to other trans-generational studies that have documented Blacks' diminished returns (10, 11, 30). Examples are the effects of family SES particularly PEA on offspring risk of obesity, mental well-being, social mobility, self-rated health, chronic disease, and impulsivity (15, 17, 18).

These results do not blame non-Hispanic Blacks as they are in fact victims. The results are due to the existing racism in the American social system. The US social and political system has failed Black families by charging them extra costs for their upward social mobility. Social mobility is not similarly easy for non-Hispanic Whites and non-Hispanic Blacks (10, 22, 23). Politics in the US have historically maximized the gains of the majority groups, particularly Whites, which comes with a cost to non-Whites (52–54).

Highly educated, high SES, motivated, high aspiration Black families face disproportionately high levels of barriers that reduce their chance of gaining health benefits from their available resources. Highly educated and high SES Blacks frequently experience discrimination that reduces the gain of their SES resources (21, 37). US, a race- and ethnic-aware society, treats social groups based on their skin color rather than their potentials, as a result, highly educated Black families do not access the same opportunity structure as high SES Whites.

In various age groups, SES, particularly educational attainment, follows larger gains for non-Hispanic Whites than non-Hispanic Blacks, as shown by the minorities' diminished returns(48). Educational attainment better correlates with outcomes of youth (35), adults (19), and older adults (55, 56) for non-Hispanic Whites than non-Hispanic Blacks. It is not just educational attainment (14, 16, 57) but other resources such as employment(58), marital status(31), neighborhood quality (59), social contacts (60) and even psychological assets (61, 62) all have smaller effects for non-Hispanic Blacks than for non-Hispanic Whites. These are all indicative of structural and systemic racism (63–72).

5. Limitations

This study is not without methodological limitations. First, because of the cross-sectional design, we are unable to make any causal inferences. Research should use longitudinal studies with repeated observations of GPA over time. However, reverse causation is not very likely as poor GPA of offspring is unlikely to result in low educational attainment of the parents (due to temporal order). Second, this study and most of the literature on diminished returns have compared non-Hispanic Blacks and non-Hispanic Whites. As a result, we know

less about other racial and ethnic groups. In addition to race and ethnicity, other factors may potentially alter the gains of PEA on college students' GPA. These include region, wealth, and college characteristics. It is still unknown if similar diminished returns exist for other socially marginalized identities such as sexual orientation and citizenship. Third, not all potential confounders were controlled for in the current study. Researchers may try to replicate the current findings after controlling for wealth, employment, health, and other family and individual factors. Finally, this study only described and did not explore the potential mechanism behind these diminished returns. Research may explore whether wealth, employment, stress, discrimination, or behaviors explain such differential effects. Despite all these methodological limitations, the current study results extend the existing literature on trans-generational diminished returns of SES among minorities.

6. Conclusions

In summary, compared to non-Hispanic Whites, on-Hispanic Black college students gain less GPA from their PEA. This may be due to the complexities of the effects of race/ethnicity on college admission in the US, or racism, discrimination, and societal barriers in the daily lives of non-Hispanic Blacks. As SES resources show diminished returns for non-Whites, policies and programs should address multi-level barriers in the daily lives of racial and ethnic minority groups. Such policies and programs need to go beyond equal access to SES resources such as education across race and ethnic groups. A true equity is probably not achievable unless US society similarly and fairly treats all social groups.

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Table 1.

Descriptive statistics overall and by race/ethnicity.

	All (<i>n</i> = 18,072)		non-Hispanic Whites (<i>n</i> = 16,718)		non-Hispanic Blacks (<i>n</i> = 1,354)	
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Gender at the Time of Survey ^{*a}						
Male	34.72(0.00)	34.03–35.42	35.19(0.00)	34.47–35.92	28.94(0.01)	26.59–31.41
Female	65.28(0.00)	64.58–65.97	64.81(0.00)	64.08–65.53	71.06(0.01)	68.59–73.41
Sexual Orientation ^{*a}						
Heterosexual	16.68(0.00)	16.15–17.23	16.90(0.00)	16.34–17.47	14.06(0.01)	12.31–16.02
Homosexual or Bisexual	83.32(0.00)	82.77–83.85	83.10(0.00)	82.53–83.66	85.94(0.01)	83.98–87.69
Transgender status ^{*a}						
No	97.81(0.00)	97.58–98.01	97.73(0.00)	97.49–97.94	98.75(0.00)	97.99–99.22
Yes	2.19(0.00)	1.99–2.42	2.27(0.00)	2.06–2.51	1.25(0.00)	0.78–2.01
	Mean(CI)	Mean(CI)	Mean(CI)	Mean(CI)	Mean(CI)	Mean(CI)
Age (Year) ^{*b}	21.66(0.04)	21.59–21.73	21.51(0.04)	21.44–21.58	23.45(0.21)	23.03–23.87
Financial distress ^{*b}	2.18(0.01)	2.17–2.20	2.15(0.01)	2.13–2.17	2.59(0.03)	2.53–2.64
PEA ^{*b}	5.77(0.01)	5.75–5.79	5.83(0.01)	5.81–5.85	5.09(0.04)	5.00–5.17
GPA ^{*b}	6.62(0.01)	6.60–6.65	6.70(0.01)	6.68–6.73	5.63(0.05)	5.54–5.73

Notes: Source: The Healthy Mind Study (HMS, 2016–2017);

* $p < 0.05$.^a: Chi Square test,^b: independent samples t test

Table 2.

Summary of two linear regressions by race / ethnicity.

	b	SE	95% CI		t	p
Model 1 (Main Effects) (n = 18,072)						
Race / ethnicity (non-Hispanic Black)	-0.82	0.04	-0.90	-0.73	-18.55	<0.001
Age (Years)	0.01	0.00	0.00	0.01	3.07	0.002
Gender at the Time of Survey (Female)	0.36	0.02	0.31	0.41	14.48	<0.001
Sexual Orientation (Heterosexual)	0.06	0.03	0.00	0.12	1.88	0.060
Transgender status (Transgender)	0.24	0.08	0.08	0.40	2.87	0.004
Transfer Status	0.05	0.02	0.02	0.09	3.27	0.001
Financial distress	-0.27	0.01	-0.29	-0.24	-24.13	<0.001
Parental Educational Attainment (PEA)	0.22	0.01	0.20	0.23	24.20	<0.001
Intercept	5.40	0.11	5.19	5.62	48.82	<0.001
Model 2 (Interaction Effects) (n = 18,072)						
Race / ethnicity (non-Hispanic Blacks)	-0.08	0.15	-0.36	0.21	-0.53	0.597
Age (Years)	0.01	0.00	0.00	0.01	2.77	0.006
Gender at the Time of Survey (Female)	0.36	0.02	0.31	0.41	14.61	<0.001
Sexual Orientation (Heterosexual)	0.06	0.03	0.00	0.12	1.87	0.062
Transgender status (Transgender)	0.24	0.08	0.08	0.41	2.95	0.003
Transfer Status	0.05	0.02	0.02	0.08	3.16	0.002
Financial distress	-0.26	0.01	-0.28	-0.24	-23.82	<0.001
Parental Educational Attainment (PEA)	0.23	0.01	0.21	0.25	24.64	<0.001
Race / ethnicity (non-Hispanic Black) × Parental Educational Attainment (PEA)	-0.14	0.03	-0.20	-0.09	-5.29	<0.001
Intercept	5.33	0.11	5.11	5.54	47.69	<0.001

Notes: Source: The Healthy Mind Study (HMS, 2016–2017); Outcome: GPA, CI: Confidence Interval

Table 3.

Summary of two linear regressions by race/ethnicity.

	b	SE	95% CI		t	p
Model 3 (non-Hispanic Whites) (n = 16,718)						
Age (Years)	0.01	0.00	0.00	0.01	2.61	0.009
Gender at the Time of Survey (Female)	0.37	0.03	0.32	0.42	14.43	<0.001
Sexual Orientation (Heterosexual)	0.07	0.03	0.00	0.13	2.10	0.036
Transgender status (Transgenders)	0.25	0.08	0.08	0.41	2.94	0.003
Transfer Status	0.06	0.02	0.02	0.09	3.28	0.001
Financial distress	-0.27	0.01	-0.29	-0.24	-23.61	<0.001
Parental Educational Attainment (PEA)	0.23	0.01	0.21	0.25	24.61	<0.001
Intercept	5.32	0.12	5.09	5.54	45.56	<0.001
Model 3 (non-Hispanic Blacks) (n = 1,354)						
Age (Years)	0.00	0.01	-0.01	0.02	0.42	0.676
Gender at the Time of Survey (Female)	0.28	0.11	0.07	0.49	2.62	0.009
Sexual Orientation (Heterosexual)	0.00	0.14	-0.27	0.28	0.02	0.982
Transgender status (Transgenders)	0.41	0.45	-0.47	1.28	0.92	0.359
Transfer Status	-0.03	0.07	-0.16	0.10	-0.42	0.677
Financial distress	-0.19	0.05	-0.28	-0.09	-3.88	<0.001
Parental Educational Attainment (PEA)	0.09	0.03	0.03	0.15	2.89	0.004
Intercept	5.45	0.40	4.67	6.23	13.75	<0.001

Notes: Source: The Healthy Mind Study (HMS, 2016–2017); Outcome: GPA; PEA: Parent Educational Attainment, SE: Standard Error; CI: Confidence Interval