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Original Paper

Black-White Differences in the Protective Effects of Income against Perceived Financial Difficulties in the United States

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Abstract

One of the components of the protective effects of overall high socioeconomic status (SES) on health is high subjective SES. As SES has shown weaker health effects for marginalized groups, a phenomenon called Marginalization-related Diminished Returns (MDRs), we conducted this study to test differential associations between two objective SES indicators, namely education and household income, with a subjective SES indicator (perceived financial difficulties) by race. For this cross-sectional analysis, we used the Health Information National Trends Survey (HINTS 2020) data. Participants included 1403 individuals who identified as either non-Latino Black or non-Latino White. Age, sex, marital status, and employment were used as control variables, while education and income were used as independent variables. Perceived financial difficulties were the outcome. Binary logistic regression was used for main data analysis. Linear regression was used for sensitivity analysis. Overall, high education and household income were associated with lower odds of perceived financial difficulties. We documented a statistical interaction between race and income on subjective SES indicating a weaker inverse association between household income and perceived financial difficulties for non-Latino Black than non-Latino White individuals. The results remained similar using linear or logistic regression models. We did not find racial differences in the association between education and perceived financial difficulties. In the US, and under structural racism, the link between objective SES indicators such as

income and perceived financial difficulties differs for non-Latino Black and non-Latino White people. Income may better reduce perceived financial difficulties for non-Latino Black than non-Latino White individuals. This finding is in line with the MDRs framework and suggests a mechanism for why we observe weaker health effects of objective SES indicators, such as income, for racial minorities in the US, and why we observe racial health disparities across class lines.

Keywords

Education, income, poverty, financial difficulties, socioeconomic status, population groups, racial groups

1. Introduction

An extensive amount of work conducted by scholars such as Michael Marmot (Marmot, 2001, 2005), Mark Hayward (Montez, Hummer, & Hayward, 2012; Montez, Zajacova, & Hayward, 2017; Montez et al., 2019), Bruce Link (Clouston & Link, 2021), Catherine Ross and John Miroswky (Mirowsky & Ross, 2015; Ross & Mirowsky, 1995, 1999), James House (House, Lantz, & Herd, 2005), Paula Lantz (Lantz, House, Mero, & Williams, 2005; Lantz, Weigers, & House, 1997), David Williams (Lantz et al., 1998; David R Williams, Priest, & Anderson, 2016) and others (Needham et al., 2015) have shown that high socioeconomic status (SES) indicators, such as education, promote a wide range of health outcomes. For example, Marta Farah (Farah, 2018; Hackman & Farah, 2009; Hackman, Farah, & Meaney, 2010; Lawson et al., 2017; Noble, Wolmetz, Ochs, Farah, & McCandliss, 2006), Kim Noble (Noble et al., 2006), and others (Grasset et al., 2019; Parker et al., 2017) have shown that effects of SES can be seen for many neurodevelopmental outcomes, such as memory and cognition. One of the mechanisms that may explain the health effects of SES indicators such as education and income is reducing perceived financial difficulties. Individuals with higher education and income are protected against perceived financial difficulties. As perceived financial difficulties operate as a stressor, and influence a wide range of behaviors, high subjective SES helps explain why highly educated and high-income people have better health and behavior outcomes (Noble et al., 2006; Rao et al., 2010).

However, as shown by the Marginalization-related Diminished Returns (MDRs) phenomenon (Assari, 2017; Assari, 2018a), the behavioral and health effects of SES indicators, such as education and income, tend to be weaker for racial minorities, including weaker effects on non-Latino Black populations than non-Latino Whites (Assari, 2018b; B. M. Assari S, Caldwell CH, Zimmerman MA, 2020; Shervin Assari, Shanika Boyce, Mohsen Bazargan, & Cleopatra H Caldwell, 2020; Assari, Boyce, Bazargan, Caldwell, & Zimmerman, 2020; Assari & Caldwell, 2018b, 2019b; Assari, Mardani, Maleki, Boyce, & Bazargan, 2021). For example, the impact of education and income on memory, emotion regulation, and cognition is weaker for non-Latino Black than non-Latino White children and adults (Kershaw, Albrecht, & Carnethon, 2013; Morello-Frosch & Jesdale, 2006; Tomaskovic-Devey, 1993). Similarly, the effects of education and income on stress (Shervin Assari & Mohsen Bazargan, 2019e), depression (Shervin Assari, Shanika Boyce, Mohsen Bazargan, & Cleopatra H. Caldwell, 2020), chronic disease

(C. H. Assari S, Bazargan M., 2019; Shervin Assari, 2020), and substance use (Assari, Boyce, Caldwell, & Bazargan, 2020) are weaker for non-Latino Black than non-Latino White individuals.

This is attributed to the residual effects of racism and social stratification, beyond SES indicators, in the US (Assari, 2018a). If non-Latino Black families with high education and income work in worse jobs (Shervin Assari & Mohsen Bazargan, 2019e), experience worse treatment (Assari, Cochran, & Mays, 2021), and live in worse neighborhoods (Assari, Boyce, Caldwell, Bazargan, & Mincy, 2020), then the health effects of their SES would be weaker than for non-Latino Whites.

Built on the Marginalization-related Diminished Returns (MDRs) phenomenon (Assari, 2017; Assari, 2018a) defined as weaker economic and health effects of SES indicators such as education and income for marginalized groups, particularly non-Latino Black individuals in the US than non-Latino White individuals (Assari, 2017; Assari, 2018a), we aimed to compare the associations between education, income, and perceived financial difficulties by race. In line with past work by Assari (Assari, 2017; Assari, 2018a), Ferarro (Farmer & Ferraro, 2005), Thorpe (Bell, Sacks, Thomas Tobin, & Thorpe, 2020; Laveist, Thorpe, Mance, & Jackson, 2007; Wilson, Thorpe, & LaVeist, 2017), Hudson (D. Hudson, Sacks, Irani, & Asher, 2020; D. L. Hudson et al., 2012; D. L. Hudson, Puterman, Bibbins-Domingo, Matthews, & Adler, 2013), Kaufman (Kaufman, Cooper, & McGee, 1997), Braveman (Braveman et al., 2005), Shapiro (M. Oliver & Shapiro, 2013; M. L. Oliver & Shapiro, 1999), Williams (David R Williams, 1999; D. R. Williams, Costa, Odunlami, & Mohammed, 2008), Ceci (Ceci & Papierno, 2005), and Navarro (Navarro, 1989, 1990, 1991), and others (Spera, Wentzel, & Matto, 2009), we expect weaker effects of objective SES indicators on subjective SES (perceived financial difficulties) for racial minorities. However, given that each SES indicator may have unique effects (Darin-Mattsson, Fors, & Kåreholt, 2017), we took a nuanced approach and separately tested these hypotheses for education and income.

2. Methods

Health Information National Trends Survey (HINTS 2020)

This secondary data analysis used a cross-sectional design. Publicly available data came from the Health Information National Trends Survey (HINTS 2020) Cycle 4. HINTS is a national health study of US adults. Data collection for HINTS 5 (Cycle 4) completed between February and June 2020.

Ethics

Given the HINTS data's de-identified nature, our secondary analysis was exempt from a full ethics review.

Samples and Sampling

The HINTS study participants were drawn from adults residing across US states. The goal was to obtain 3,500 completed questionnaires. The sampling frame for Cycle 4 consisted of a database of addresses used by Marketing Systems Group (MSG) to provide random samples of addresses. Any non-vacant US residential address was subject to sampling. This included but not limited to those present on the MSG

database, including post office (P.O.) boxes, throwbacks (i.e., street addresses for which mail is redirected by the United States Postal Service to a specified P.O. box), and seasonal addresses. A total of 3,865 completed surveys were collected with a response rate of 37%. Of these, 1403 individuals (1109 non-Latino White and 294 non-Latino Black) were included in this analysis because they belonged to the racial groups of interest in this study (non-Latino White and non-Latino Black) and had complete data on age, sex, marital status, education, income, and perceived financial difficulties.

HINTS 2020 used a multi-stage, stratified random sampling. For the first sample stage, the sampling frame of addresses was grouped into the following two explicit sampling strata: 1). Addresses in areas with high concentrations of minority population; and 2). Addresses in areas with low concentrations of minority population. The second sampling stage was selection of a participant from each selected household. Only one participant was selected from selected household, if eligible.

Variables

Outcome

Perceived Financial Difficulties. The dependent variable was perceived financial difficulties (poor subjective SES), measured by a single item that measures self-rated SES level. The item read as: "Which one of these comes closest to your own feelings about your household income?" Responses included (1) Living comfortably on present income, (2) Getting by on present income, (3) Finding it difficult on present income, and (4) Finding it very difficult on present income. We combined the third and fourth responses as suggestive of financial hardship and perceived financial difficulties. We coded perceived financial difficulties as 1 vs. 0 (other responses). Thus, we expected odds ratio (OR) smaller than 1.0 for the association between education and income with our outcome.

Moderator

Race. HINTS 2020 participants self-identified their race as non-Latino *White,* non-Latino *Black, Asian, or other groups. Only non-Latino Black and non-Latino White individuals were included in this analysis.* For this study, race was coded as 1 for non-Latino Black and 0 for non-Latino White (reference category).

Independent Variables

Education. The first independent variable was *highest level of* education at the individual level, measured with a self-reported education question. We calculated this variable based on the highest level of education which was attained. The specific item was "What is the highest grade or level of schooling you completed?". This variable was continuous with the following seven categories. (1) Less than 8 years

(2) 8 through 11 years, (3) 12 years or completed high school, (4) Post high school training other than college (vocational), (5) Some college, (6) College graduate, and (7) Postgraduate

*Income. Based on a self-report measure, we calculated total household income, earned from all sources. The item read as "*Thinking about members of your family living in this household, what is your combined annual income?*" Responses included* (1) $0 to $9,999, (2) $10,000 to $14,999, (3)

$15,000 to $19,999, (4) $20,000 to $34,999, (5) $35,000 to $49,999, (6) $50,000 to $74,999, (7) $75,000 to $99,999, (8) $100,000 to $199,999, and (9) $200,000 or more. *This was a continuous variable ranging from 1 to 9.*

Covariates

Sex/Gender. A dichotomous variable, gender was coded as male = 1 and female = 0 (reference category). Gender was self-reported.

Age. Participants were asked to report their age. Age was a continuous variable measured in years. The question read as "What is your age?".

Marital Status. The individual disclosed family marital status, a dichotomous variable, was coded as married, non-married (reference category). The specific item read as "What is your marital status?"

Employment Status. Employment was self-reported and was a dichotomous variable. Employed was coded as 1 and unemployed was coded as 0.

Data Analysis

We performed univariate, bivariate, and multivariable analysis in SPSS 21. Our univariate analysis included calculation and report of the mean (SD) and frequency (%) for our variables overall and by race. Our bivariate analyses included Chi-square and t test to compare racial groups. For our multivariable analysis, first we used logistic regression models in which the independent variables were either education or income, the outcome was perceived financial difficulties, and the covariates were gender, age, employment, and marital status. Then, we ran linear regression models for replication, with score of perceived financial difficulties as the outcome. For our models, the moderator was race as a proxy of racialization and racism (residual effect of race after SES is controlled). Odds Ratio (OR), regression coefficient, standard errors (SEs), and p-values were reported. Any p-value of less than 0.05 was significant.

3. Results

Overall, 1403 individuals entered our analysis. Our participants were either non-Latino White or non-Latino Black. **Table 1** shows the summary of descriptive statistics overall and by race. Non-Latino Black participants had lower education and income and reported higher perceived financial difficulties than non-Latino White participants.

Table 1. Descriptive Data Overall and by Race

	All N = 1403 (100%)		**Non-Latino White N = 1109 (79%)**		**Non-Latino White N = 294 (21%)**		**p**
	Mean	**SD**	***Mean***	**SD**	***Mean***	**SD**	
Age (Years)	55.56	16.350	55.48	16.669	55.84	15.107	
Education (Years)	5.1882	1.48322	5.2894	1.45451	4.8061	1.53007	*
Income	5.8232	2.19521	6.0442	2.12532	4.9898	2.25731	*
	N	%	N	%	N	%	
Race							
non-Latino White	1109	79.0	1109	100	0	0	
non-Latino Black	294	21.0	0	0	294	100	
Gender							
Female	828	59.0	640	57.7	188	63.9	*
Male	575	41.0	469	42.3	106	36.1	
Employment Status							
Unemployed	632	45.0	487	43.9	145	49.3	*
Employed	771	55.0	622	56.1	149	50.7	
Marital Status							
Not-Married	722	51.5	531	47.9	191	65.0	*
Married	681	48.5	578	52.1	103	35.0	
Perceived Financial Difficulties							
No	1136	81.0	924	83.3	212	72.1	*
Yes	267	19.0	185	16.7	82	27.9	

* Significant Difference for Comparison of Non-Latino Black individuals and non-Latino White individuals

Linear regression models in the pooled sample

As shown by **Table 2**, education and income showed main effects on individuals' perceived financial difficulties net of confounders. Compared to their peers, low educated and low-income individuals reported higher perceived financial difficulties. Despite this, the effect of income on perceived financial difficulties was weaker for non-Latino Black individuals than non-Latino White individuals.

Table 2. Summary of Logistic Regression Models without (M1) and with (M2) Interactions

	M1 All (No Interaction)						M2 All M1 + Interaction)					
	B	**SE(B)**	**OR**	**95% CI**		**Sig**	**B**	**SE(B)**	**OR**	**95% CI**		**Sig**
Non-Latino Black	0.291	0.171	1.338	0.956	1.872	0.089	0.008	0.552	1.008	0.342	2.976	0.988
Gender (Male)	0.190	0.155	1.210	0.892	1.640	0.220	0.190	0.156	1.209	0.891	1.641	0.223
Age (Years)	-0.015	0.005	0.985	0.975	0.996	0.005	-0.015	0.005	0.985	0.975	0.995	0.004
Employed	0.145	0.170	1.157	0.829	1.614	0.392	0.177	0.171	1.194	0.855	1.669	0.299
Married	0.256	0.189	1.292	0.893	1.869	0.175	0.243	0.189	1.275	0.881	1.847	0.198
Education	0.073	0.056	1.076	0.965	1.200	0.189	0.127	0.068	1.136	0.995	1.296	0.060
Income	-0.516	0.046	0.597	0.545	0.653	< 0.001	-0.592	0.054	0.553	0.498	0.615	< 0.001
Education x non-Latino Black	-	-	-	-	-	-	-0.179	0.121	0.836	0.660	1.059	0.137
Income x non-Latino Black	-	-	-	-	-	-	0.253	0.084	1.288	1.092	1.519	0.003

Outcome: Perceived financial difficulties

Linear regression models by race

As shown by **Table 3**, higher education and income were associated with less perceived financial difficulties for non-Latino Black and non-Latino White individuals, but these were more pronounced for non-Latino White individuals than non-Latino Black individuals.

Table 3. Summary of Logistic Regression Models in Non-Latino White and Non-Latino Black People

	M3 Non-Latino White Participants						M4 Non-Latino Black Participants					
	B	**SE(B)**	**OR**	**95% CI**		**Sig**	**B**	**SE(B)**	**OR**	**95% CI**		**Sig**
Sex (Male)	0.157	0.184	1.170	0.816	1.677	0.393	0.265	0.296	1.303	0.730	2.326	0.370
Age (Years)	-0.013	0.006	0.987	0.975	0.998	0.027	-0.020	0.010	0.980	0.960	1.000	0.056
Employed	0.157	0.203	1.170	0.787	1.741	0.437	0.242	0.321	1.274	0.679	2.392	0.450
Married	0.287	0.229	1.333	0.851	2.089	0.210	0.151	0.337	1.163	0.601	2.250	0.653
Education	0.127	0.068	1.135	0.994	1.297	0.061	-0.049	0.101	0.952	0.782	1.160	0.628
Income	-0.590	0.057	0.554	0.496	0.620	< 0.001	-0.342	0.080	0.710	0.607	0.831	< 0.001

Outcome: perceived financial difficulties

Sensitivity analysis (linear regression)

The results remained similar using linear regression models as sensitivity analysis. While high-income non-Latino Whites reported low perceived financial difficulties, high-income non-Latino Black people reported higher perceived financial difficulties. As the results remained unchanged, we only reported the numbers for logistic regression models.

4. Discussion

High education and income were associated with less perceived financial difficulties, however, race moderated the association between income and perceived financial difficulties. We observed a weaker association between high income and low perceived financial difficulties for non-Latino Black individuals than non-Latino White individuals. As a result, high-income non-Latino Black individuals reported some remaining perceived financial difficulties that was unexpected given their income.

The first finding on the negative effects of education and income on perceived financial difficulties is in line with fundamental cause theory, the social determinants of health framework, and other theories and models that explain how and why SES indicators such as education and income impact health. As Marmot and others have explained, education and income operate as main social determinants of health, however, some of these effects are due to low perceived financial difficulties of high SES individuals (Doctoroff & Arnold, 2017). Thus, low perceived financial difficulties is one of the reasons why high education and income are associated with desired health outcomes (Assari, Caldwell, & Mincy, 2018; Ergin, Hassoy, Tanik, & Aslan, 2010; Mensch, Chuang, Melnikas, & Psaki, 2019; Skoe, Krizman, & Kraus, 2013).

Our second finding of differential associations between income and perceived financial difficulties by race aligns with recent literature on differential effects of SES indicators such as education and income on health and behaviors of racial groups, with weaker effects observed for non-Latino Black than non-Latino White individuals. Regardless of outcome, SES indicators, age groups, context, education and income are associated with larger health effects for non-Latino White individuals than non-Latino Black individuals. However, no previous studies had tested if these differences may be in part because of high perceived financial difficulties in high SES non-Latino Black individuals.

Education and income have weaker protective effects on obesity (Assari, 2018d), depression (Assari & Caldwell, 2018a), anxiety, suicide (Shervin Assari, Shanika Boyce, Mohsen Bazargan, & Cleopatra H. Caldwell, 2020), internalization (Assari & Islam, 2020), externalization, and self-rated health (Assari, Lankarani, & Burgard, 2016) for non-Latino Black than non-Latino White individuals. As a result of these MDRs, we observe a higher-than-expected risk of chronic diseases (Assari, 2019b; Assari & Caldwell, 2019a; Assari & Moghani Lankarani, 2018a), disability (Shervin Assari & Mohsen Bazargan, 2019c), hospitalization (Shervin Assari & Mohsen Bazargan, 2019d), and mortality (Assari, 2018e; Shervin Assari & Mohsen Bazargan, 2019a) for highly educated and high-income non-Latino Black individuals, while the same risks remain low in non-Latino Whites with similar SES levels. In addition,

as a result of these MDRs, we see sustained racial health disparities across SES line, as well as when the economic gap across groups narrows.

This is the first time we have established MDRs for perceived financial difficulties. MDRs are shown for stress (Shervin Assari & Mohsen Bazargan, 2019e) and trauma (Shervin Assari, 2020; S. Assari, 2020b). They also exist for mental (Assari, Lapeyrouse, & Neighbors, 2018), behavioral (Assari & Mistry, 2018, 2019), and physical health (Assari & Bazargan, 2020), as well as healthcare (Shervin Assari & Mohsen Bazargan, 2019b; Assari & Hani, 2018), and substance use (S. Assari et al., 2020). In addition, poor mental health (Assari, 2018c, 2018d), poor sleep (Shervin Assari, 2021), poor diet (Assari, Boyce, Bazargan, Caldwell, & Mincy, 2020), and high substance use (Assari, Farokhnia, & Mistry, 2019; Assari & Mistry, 2018; Shervin & Ritesh, 2019) are also shown in high SES racial minority groups (Assari, 2018a; Assari & Lankarani, 2016). The unique contribution of this work is the expansion of this literature to perceived financial difficulties.

The MDRs framework can be regarded as a paradigm shift in disparities research (Assari, 2017; Assari, 2018a), because unlike most of the existing literature that has exclusively focused on low SES as the mechanism for racial health inequalities, MDRs acknowledges that racial disparities can occur across the full SES spectrum. Thus, researchers and quantitative modelers should expect SES effects to vary by race. In addition, they invite researchers to study structural and environmental mechanisms that explain why health effects of available SES indicators are weaker in racial minority groups. The application of MDRs may also help us understand why racial health gaps sometimes widen, rather than narrow, as SES increases (Assari, 2017; Assari, 2018a). Studies should not reduce the problem of health disparities to the problem of SES gap. By testing non-linear and non-additive effects of race and SES, MDRs allow the effects of each SES indicator to vary by race and demographic factors. This is more realistic than the assumption of universality in SES effects. One size never fits all, after all.

A wide range of structural and societal mechanisms may explain these MDRs. It is difficult to decompose the mechanism, particularly because many social mechanisms and processes can interfere with the return of SES indicators such as income and how they reflect employment, wealth, and residential area. Most of these processes are racialized in the US, generating fewer outcomes for racial minorities (Assari, 2017; Assari, 2018a). For example, high SES Black people are likely to work in jobs with lower pay and lower occupational prestige than their White counterparts. Similarly, high SES racial minority people work in jobs with higher stress and exposure to toxins (S. Assari & M. Bazargan, 2019). Racial compositions of jobs may also be associated with discrimination for highly educated racial minority employees (Assari & Moghani Lankarani, 2018b). As a result, high SES racial minorities (Assari, 2017; Assari, 2018a) remain at risk of economic insecurity (Assari, 2018b), stress (Shervin Assari & Mohsen Bazargan, 2019e), living in poor residential areas (Shervin Assari, Shanika Boyce, Cleopatra H. Caldwell, et al., 2020), and low wealth (S. Assari, 2020a). Thus, interwoven, complex social processes may explain why high SES racial minority individuals remain at economic risk.

Future research should test if work conditions, income, occupational prestige, and employment benefits are why education generates less health and behavioral benefits for racial minorities than non-Latino White individuals. Past work shows that diet (Assari & Lankarani, 2018), exercise (Assari, 2019a), sleep (S. Assari, 2021), and substance use (Assari, Mistry, & Bazargan, 2020) are all worse for highly educated, high-income, and employed racial minority people. What is left unknown is whether time use patterns also play a role in explaining the diminishing returns of SES for minority people.

Limitations

We should list our few limitations. Our first limitation was the cross-sectional design. Such data and design cannot and should not be used for any causal inferences. The associations between income and perceived financial difficulties is bi-directional. Not only may perceived financial difficulties cause lower engagement in economic activities that generate income, but also lower incomes cause perceived financial difficulties. Given the cross-sectional design, we use associational, not causal language to describe our findings. Another limitation is that we did not include all relevant SES indicators such as income to needs ratio. The study also did not include racial minority groups other than non-Latino Black individuals. We need to test the same hypothesis for Latino, Native American, Asian American, and other-racial and ethnic groups. Future research may include other indicators such as parental education, poverty status, and neighborhood SES. Given these limitations, the results should be interpreted with caution. However, despite all these limitations, this is the first study on MDRs of income on perceived financial difficulties.

Implications

The results suggest that to eliminate racial injustice and inequalities, we may need policies that aim for more than closing the racial gap in objective SES indicators such as income. We need policies that not only equalize objective and subjective SES, but also equalize living conditions. This is only possible if we can undo historic injustice for non-Latino Black people. Economic and social policies that target various institutions are needed to undo historical inequalities that remain across SES levels.

Conclusion

Income does not have similar association with perceived financial difficulties across diverse racial groups. High-income non-Latino Black individuals report higher than expected perceived financial difficulties, a pattern different from their high-income non-Latino White counterparts. As a result, some racial health disparities may remain across the full SES spectrum. As proposed by the MDRs, race should not be reduced to SES, and racial disparities should not be reduced to economic disparities. Some of the effects of race is beyond SES. Such MDRs may reflect discrimination and racism in the everyday lives of non-Latino Black people due to social stratification, structural racism, and historical marginalization.

Conflict of Interests

The author has no conflicts of interest.

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