

Article

# To Be Twice as Good to Get Half

Shervin Assari <sup>1,2,3,4,\*</sup>, Hossein Zare <sup>5,6</sup>

<sup>1</sup> Department of Internal Medicine, Charles R. Drew University of Medicine and Science, Los Angeles, CA, United States

<sup>2</sup> Department of Family Medicine, Charles R. Drew University of Medicine and Science, Los Angeles, CA, United States

<sup>3</sup> Department of Urban Public Health, Charles R. Drew University of Medicine and Science, Los Angeles, CA, United States

<sup>4</sup> Marginalization-Related Diminished Returns (MDRs) Center, Los Angeles, CA, United States

<sup>5</sup> Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, United States

<sup>6</sup> School of Business, University of Maryland Global Campus (UMGC), Adelphi, MD, United States

\*Correspondence: Shervin Assari (assari@umich.edu)

## Abstract:

“To Be Twice as Good to Get Half” is a common mindset among high aspiration and ambition Black individuals in the U.S., capturing the lived reality of Minorities’ Diminished Returns (MDRs). This paper explains that MDRs reflect how, even with high levels of ambition, self-efficacy, education, and income, Black individuals and other marginalized groups do not experience the same protective benefits for health and well-being as White populations. Systemic obstacles embedded within U.S. society weaken the expected returns on socioeconomic achievements for racialized individuals, creating a reality where “being twice as good” still results in lesser outcomes. High-SES Black individuals, for instance, continue to face significant risks for adverse outcomes, such as depression and chronic disease, due to structural inequities across domains like labor market discrimination, segregation, and accumulated disadvantage from childhood. Our analysis identifies key mechanisms—including interpersonal discrimination, lower-quality education, and structural racism in sectors like banking, policing, and real estate—that erode the protective effects of SES across racial lines. Mediating factors, such as chronic stress, allostatic load, and epigenetic changes over the life course, further compound these diminished returns, weakening the expected physical and mental health benefits. Drawing on extensive evidence from U.S. national and local datasets and corroborated by international studies, this paper underscores the necessity of policies that dismantle structural barriers rather than relying solely on SES improvements. Recommendations include implementing multi-sectoral policies, recognizing the unique challenges of middle-class non-White populations, and approaching policy with humility, acknowledging that achieving equity is a long-term endeavor. By challenging the “bootstraps” narrative, this paper advocates for structural interventions aimed at genuine health and economic equity for all racial and socioeconomic groups. While we provide an in-depth analysis of MDRs’ phenomena, mechanisms, mediators, and policy implications, the experience is often distilled as, “I have to be twice as good to get half.”

## How to cite this paper:

Assari, S., & Zare, H. (2025). To Be Twice as Good to Get Half. *Journal of Biomedical and Life Sciences*, 5(1), 67–83.  
DOI: [10.31586/jbls.2025.1158](https://doi.org/10.31586/jbls.2025.1158)

Received: November 22, 2024

Revised: January 11, 2025

Accepted: February 9, 2025

Published: May 5, 2025



Copyright: © 2025 by the authors. Submitted for possible open-access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).

**Keywords:** Minorities' Diminished Returns, Systemic Barriers, Health Disparities, Socioeconomic Status, Structural Racism, Chronic Stress, Policy Interventions

## 1. Background

The adage “We have to be twice as good to get half” [1] aptly captures the lived experience of highly ambitious Black individuals and other marginalized groups. While ambition and hard work are often celebrated as pathways to success, these qualities are insufficient to guarantee equitable outcomes for racialized individuals [2,3]. For many high-SES Black individuals, achievements in education, employment, and income come at a steep price and do not always translate into the expected benefits, such as better health or enhanced well-being. This reality stems not from personal shortcomings but from deeply embedded structural biases that diminish the rewards of socioeconomic success for minoritized populations. Ambitious Black individuals, for example, may face unique forms of scrutiny from both within and outside their communities—sometimes being labeled as “Oreo” by their peers [4] while remaining underappreciated or discriminated against by the majority [5,6]. These challenges underscore the complex interplay of race, ambition, and societal biases [7], showing that social identity and skin color continue to influence outcomes in ways that ambition alone cannot overcome.

This phenomenon is also evident among high-achieving Black individuals [8], who often remain at risk of adverse health outcomes such as depression and suicide, even when their SES is high. The Minorities' Diminished Returns (MDRs) framework [9] provides a valuable lens through which to understand these disparities. MDRs suggest that resources like education, income, and self-efficacy yield weaker health and psychological benefits for Black populations than they do for White populations. Socioeconomic success does not serve as a sufficient buffer against the negative effects of structural racism and social inequities, and as a result, Black individuals cannot rely on high SES alone for protection against adverse mental and physical health outcomes. This reality highlights the need to address the systemic factors that limit the benefits of SES for minoritized communities and amplify the health disparities that persist despite individual success.

Self-efficacy, an essential psychological resource that typically correlates with improved outcomes in mortality, education, and employment, exemplifies the diminished returns Black individuals face. For White populations, high self-efficacy is associated with longevity, academic achievement, and career success [10-13]. However, for Black individuals, the protective effects of self-efficacy are weaker. Despite their self-belief and determination, Black individuals encounter structural barriers and discrimination that limit the full potential of their efforts. While self-efficacy may indeed motivate them to pursue ambitious goals, it does not reliably shield them from health risks or provide the same upward mobility experienced by non-Black populations. Interventions focused on fostering self-efficacy among Black youth, while well-intentioned, may thus fall short of expectations if the structural barriers that inhibit the impact of self-efficacy are not addressed.

## 2. Content of This paper

This paper delves into the phenomenon of Minorities' Diminished Returns (MDRs) [14], which demonstrates that socioeconomic resources—such as education, income, and self-efficacy—yield weaker health and well-being benefits for Black individuals and other marginalized populations than for White individuals. Despite achieving similar or even higher levels of socioeconomic success, these groups do not experience equivalent protective benefits, largely due to systemic barriers embedded within U.S. society. The paper explores various mechanisms driving MDRs [15], including interpersonal and structural discrimination, residential segregation, lower-quality education, and labor market inequities, all of which erode the potential gains of socioeconomic resources for minoritized individuals. Further, it examines how chronic stress, allostatic load, and epigenetic changes mediate these diminished returns, reducing the expected health

benefits across the lifespan. Drawing on literature from both U.S. and international studies, this analysis underscores the need for structural interventions that address these systemic barriers. The paper proposes policy recommendations that prioritize dismantling these obstacles to create more equitable health and economic outcomes, with a particular emphasis on multi-sectoral approaches, supporting the non-White middle class, and fostering long-term, humble commitments to equity. In doing so, it challenges the “bootstraps” narrative, advocating for a shift from individual responsibility to structural solutions that ensure everyone can fully benefit from their achievements.

### 3. Minorities Diminished Returns

This pattern of diminished returns is also evident in the relationship between physical health and mental health [16]—a connection that is generally robust but weakened for Black individuals. While good physical health often supports better mental health, this linkage is less pronounced for Black populations, a phenomenon sometimes referred to as the “Black mental health paradox.” [17-21] Researchers have questioned why Black individuals often report relatively stable mental health even in the face of declining physical health, and the answer may lie in the weakened relationship between physical and mental well-being for this population. This disconnect suggests that the systemic pressures and unique social contexts faced by Black individuals may disrupt the expected pathways between health variables, creating a unique health landscape where positive changes in one domain do not necessarily predict improvements in another.

Similarly, the relationship between physical health and happiness is weaker for Black individuals than for White individuals [108]. Health improvements, which are generally expected to lead to greater happiness, do not consistently translate into increased life satisfaction for Black individuals [108]. This disparity further highlights how structural inequities, discrimination, and social stressors inhibit the full benefits of health. The broader social context—marked by systemic racism and marginalization—may dampen the happiness typically associated with good health, revealing a distinct mechanism by which health and happiness are intertwined yet unequally accessible across racial lines [108].

Education and income, two pillars of socioeconomic status, are widely recognized as buffers against psychological distress and promoters of mental health [109]. However, for Black individuals, these resources provide substantially lower mental health benefits than they do for White individuals [60,77]. High education and income levels do not fully protect Black individuals from mental health risks such as anxiety and depression [60,77]. This diminished protective effect is likely exacerbated by the chronic stressors associated with racial discrimination, limited access to quality healthcare, and the challenges of navigating predominantly White professional spaces [5,6,37,66]. These factors can erode the mental health benefits that are generally expected to accompany socioeconomic advancements, further illustrating the limits of SES as a standalone solution for health disparities [110].

Consequently, high-SES Black individuals remain vulnerable to significant mental health risks, including depression and suicide [60,77]. The resilience, self-efficacy, and financial stability that often insulate White individuals from these outcomes are less effective for Black individuals, who continue to encounter systemic obstacles [110]. This enduring vulnerability highlights the limitations of solely enhancing SES as a strategy to close racial health gaps [9]. Instead, policy efforts may acknowledge and address the structural determinants that impede the benefits of socioeconomic resources for minoritized communities [14]. Such an approach requires a paradigm shift toward dismantling systemic barriers, enabling high-SES Black individuals—and marginalized populations broadly—to fully enjoy the benefits of their accomplishments [111-115].

The MDRs framework highlights the limitations of an SES-centric approach to mitigating racial health disparities. Despite achieving significant milestones in education,

income, and self-efficacy, high-SES Black individuals often reap only partial benefits from these achievements, remaining vulnerable to adverse outcomes like depression and anxiety. This reality challenges the assumption that economic and educational advancements alone can yield equitable health and well-being. Instead, the MDRs framework reveals the need for policies that go beyond socioeconomic enhancements to address the deeply rooted structural barriers that hinder these gains for minoritized groups. For genuine equity, policies may not only provide opportunities but also dismantle the systems that maintain racialized barriers, ensuring that all individuals can fully benefit from their hard-won resources. The path forward calls for a comprehensive approach—one that recognizes the unique challenges facing high-SES Black individuals and addresses the root causes of their diminished returns.

#### 4. Robustness

This framework has been observed across various marginalized groups, including Black [9,22-29], Latino [30-36], Asian [37-40], LGBTQ+ [41,42], immigrant [43-50], and American Indian/Alaska Native (AIAN) [51-53] populations, illustrating a pattern that transcends racial and ethnic lines. Additionally, MDRs are evident across a broad spectrum of outcomes, from physical health to economic stability to life expectancy. The notion of "pulling oneself up by the bootstraps" grossly oversimplifies the complex realities faced by minoritized communities. This myth ignores the systemic barriers that dilute the returns on individual effort and success, particularly for racialized groups. Even when individuals achieve high levels of education, income, or self-efficacy, structural inequities, discrimination, and historical legacies of exclusion persist, undermining the outcomes of their hard work. The pursuit of equity, therefore, cannot rest on individual ambition alone; it requires actively dismantling systemic barriers that continue to limit success for marginalized communities, regardless of their personal achievements.

Numerous large-scale studies have consistently documented the patterns of Minorities' Diminished Returns (MDRs), illustrating how socioeconomic resources yield weaker health and well-being benefits for minoritized populations. Data from the National Health Interview Survey (NHIS) [54,55] and National Health and Nutrition Examination Survey (NHANES) [56] reveal that despite similar socioeconomic gains, Black and other racialized individuals often experience poorer health outcomes compared to their White counterparts. The Health and Retirement Study (HRS) [57-59] further underscores this pattern in older adults, showing that higher SES does not equally protect Black individuals against age-related health declines. The National Survey of American Life (NSAL) [60], both in its adult and youth components, offers additional evidence, highlighting disparities in mental health returns on SES between Black and White populations. Similarly, both ABCD and the Monitoring the Future study tracks adolescent substance use and demonstrates that SES is less protective for Black youth than for White youth regarding substance use risks [61,62]. The Population Assessment of Tobacco and Health (PATH) study [63,64] and Understanding America Study (UAS) [65] provide further insights into behavioral health, showing that the mental and physical health benefits of higher SES are weaker among racialized groups. Additionally, the Midlife in the United States (MIDUS) study [66] has documented disparities in psychological well-being and physical health among adults, revealing how socioeconomic advancements do not equally translate into mental and physical health benefits across racial lines. Collectively, these studies and many others substantiate the MDRs framework, indicating that structural barriers persistently weaken the relationship between SES and health outcomes for minoritized individuals, underscoring the need for policy responses that go beyond socioeconomic improvements alone.

Another layer of evidence supporting Minorities' Diminished Returns (MDRs) is the consistency of these findings across various geographic contexts and study designs. While national datasets [67] illustrate these patterns on a broad scale, similar results emerge in

more localized studies across diverse urban centers, including Michigan [68], Los Angeles [69], and Baltimore [70]. These city-specific studies reinforce that diminished returns on SES for minoritized populations are not artifacts of sampling frames or methodological biases but represent robust, persistent patterns. The replication of MDRs across both national and local levels, spanning different population demographics and settings, highlights the structural and universal nature of these disparities, underscoring that the weakened benefits of SES for racialized groups are deeply embedded in systemic inequities rather than confined to any particular locale or sample composition. This geographic and methodological robustness further emphasizes the urgency for targeted policies that address these structural barriers to achieve genuine equity.

The patterns of Minorities' Diminished Returns (MDRs) persist across all age groups, beginning at birth and accumulating throughout the lifespan. Low birth weight (LBW) in newborns, for instance, is more prevalent among high-SES Black women than their White counterparts, highlighting that socioeconomic advantages do not equally translate into improved birth outcomes for minoritized populations [71]. This disparity continues into childhood, adolescence, adulthood, middle age, and even older adulthood, with Black individuals consistently experiencing weaker health, mental health, and economic benefits from SES compared to White individuals at each life stage. The persistence of these diminished returns from birth onward suggests that there is no single "magic window" after birth for intervention to close these gaps. Rather, it underscores that disparities begin early and become compounded over time, making it critical to implement interventions as early as possible. However, even interventions at birth may already be "late," as structural inequities affecting prenatal health and maternal outcomes have already taken root. This cumulative pattern emphasizes the need for comprehensive and early interventions that address structural inequities across the entire life course to prevent the entrenchment of disparities over time.

Finally, the Minorities' Diminished Returns (MDRs) framework extends beyond U.S. borders, with international studies consistently revealing similar patterns across diverse social contexts. Research conducted in countries such as Germany, Israel, Mexico, and various European nations [72] demonstrates that the weaker returns on socioeconomic resources for minoritized populations are not unique to the U.S. but are instead a global phenomenon. Although the sources and shapes of marginalization vary—ranging from ethnic and racial discrimination to immigrant status and caste systems—these studies converge on a common finding: marginalized groups, despite achieving higher socioeconomic status, do not experience the same health, mental health, or economic benefits as their majority counterparts. This global evidence underscores that MDRs are rooted in structural inequities that transcend national boundaries, shaped by each country's unique forms of exclusion and stratification. The cross-national consistency of MDRs highlights the resilience of these disparities, pointing to a need for policies worldwide that recognize and address the specific sources of marginalization in each context, moving toward a more equitable distribution of socioeconomic benefits for all.

## **A. Multi-level Causes**

### **A1. Interpersonal Discrimination**

Interpersonal discrimination is a significant mechanism that drives Minorities' Diminished Returns (MDRs), limiting the full benefits of socioeconomic achievements for marginalized individuals [6,66,73-79]. Daily encounters with discrimination—whether subtle microaggressions or overt acts—undermine mental and physical well-being and can create psychological burdens that dampen the protective effects of self-efficacy, income, and education. For example, high-achieving Black professionals may face constant scrutiny and biased judgments in their workplaces, which heightens stress and erodes the mental health advantages typically associated with socioeconomic success.

This continuous exposure to interpersonal discrimination imposes an additional psychological tax on minoritized populations, diminishing the health benefits they might otherwise derive from their achievements and contributing to persistent health disparities across socioeconomic levels.

## **A2. Social Stratification and Segregation**

Social stratification and segregation are powerful forces that perpetuate racial and economic disparities, contributing to MDRs by limiting access to resources and opportunities in segregated communities [126]. Residential segregation, for example, often means that even affluent Black families live in neighborhoods with fewer amenities, lower-quality schools, and limited access to healthcare compared to similar-income White families [128]. This geographical divide reinforces social stratification, as minoritized communities are systematically excluded from the infrastructure and services that enhance well-being [129]. As a result, the potential health and economic benefits of higher SES are restricted by the social and spatial isolation of these communities, trapping them in a cycle where achievement does not yield comparable rewards and disparities continue to persist [130].

## **A3. Lower Quality of Education**

Educational quality remains unequal, often reflecting systemic racial and economic divides that leave minoritized students at a disadvantage, even when they attain higher levels of formal education [131]. Schools in predominantly Black or low-income neighborhoods frequently lack adequate funding, experienced teachers, and advanced academic programs [132]. Consequently, Black students often receive an education that, though it may formally fulfill requirements, does not equip them with the same opportunities or networks as their White counterparts [133]. This educational disparity limits the returns on educational attainment for minoritized individuals, as the quality of their education may not fully prepare them for competitive positions in the labor market or for further educational opportunities [134]. The result is an educational system that continues to uphold inequities, reducing the expected benefits of academic achievement and reinforcing the barriers faced by minoritized populations [135].

## **A4. Labor Market Discrimination**

Labor market discrimination is a critical mechanism that hinders the economic returns of education and experience for minoritized individuals. Black professionals, even with high levels of education and skill, often face hiring biases, wage disparities, and limited opportunities for advancement compared to their White peers. Research consistently shows that equally qualified Black job applicants are less likely to be hired, and when employed, they are often paid less and offered fewer leadership opportunities [59,80]. This discrimination in the workforce means that even high-SES Black individuals do not experience the same financial and occupational stability as similarly educated White individuals. The persistent bias within the labor market reduces the potential mental health and economic benefits of employment and professional success for Black individuals, perpetuating disparities and diminishing the returns on their hard-earned achievements.

## **A5. Accumulation of Disadvantage from Childhood**

The accumulation of disadvantages from an early age is another mechanism that shapes MDRs, as socioeconomic hardships and racial biases intersect throughout the life course to restrict opportunities for minoritized individuals [136]. Black children, for example, are often exposed to higher rates of poverty, poorer-quality education, and reduced access to healthcare, which creates a foundation of disadvantage that persists into adulthood [137]. As these children grow, the compounded effects of early hardships limit

the health, educational, and economic benefits they may later gain from achieving high SES [138]. The impact of cumulative disadvantage suggests that even if individuals attain higher education or income later in life, the residual effects of early life adversities—such as chronic stress and limited social capital—dampen the positive outcomes typically associated with socioeconomic success, creating a lifelong cycle of diminished returns [139].

#### **A6. Internalized Racism**

Internalized racism [81], wherein individuals begin to internalize negative societal beliefs about their own racial or ethnic group, is another mechanism that can weaken the benefits of self-efficacy and social achievements for minoritized populations [140]. The pervasive societal stigma against minoritized groups can lead individuals to doubt their worth, suppress their aspirations, or feel undeserving of their accomplishments [141]. This self-doubt, rooted in internalized racism, can reduce the psychological benefits that typically accompany high self-efficacy and economic stability. For instance, high-achieving Black individuals who have internalized racial stereotypes may experience imposter syndrome or fear of inadequacy in professional settings, which can increase stress and diminish mental health [142]. Internalized racism thereby limits the mental and emotional rewards that might otherwise stem from personal success, undermining the overall well-being of minoritized individuals despite their accomplishments [143].

#### **A7. Structural Racism in Banking, Policing, Real Estate, and Mortgage Lending**

Structural racism is pervasive across various sectors, including banking, policing, real estate, and mortgage lending, and serves as a powerful mechanism of MDRs by limiting access to essential resources and security for minoritized populations [144]. In banking, for example, Black and other minoritized individuals are often denied loans or charged higher interest rates, which restricts their ability to build wealth and invest in high-quality housing [145]. In the realm of policing, over-surveillance of Black communities leads to heightened stress and fear, further diminishing the quality of life for these individuals. Additionally, discriminatory practices in real estate and mortgage lending make it more challenging for minoritized families to buy homes in desirable neighborhoods, reinforcing residential segregation and reducing property value gains [146]. These forms of structural racism systematically strip away the economic and social benefits that high SES could provide, exacerbating health disparities and ensuring that even financially successful Black individuals cannot fully enjoy the privileges of their status.

#### **A8. Legacy of Slavery and Jim Crow Laws**

The legacy of slavery and Jim Crow laws [147] continues to cast a long shadow over the lives of Black Americans, as the effects of these historical injustices permeate every aspect of socioeconomic achievement. Enslavement and legalized segregation entrenched a racial hierarchy that not only limited the wealth and opportunities of Black individuals but also created enduring inequalities that affect subsequent generations [148]. The intergenerational trauma and economic disadvantage resulting from slavery and Jim Crow laws mean that Black families, on average, have less generational wealth, limited access to quality education, and a reduced ability to accrue assets compared to White families [149]. This historical legacy reinforces the MDRs framework, as Black individuals, despite their achievements, still grapple with a cumulative disadvantage that hinders their ability to secure health and well-being at the same level as their White peers [150]. The enduring impact of slavery and segregation underscores that addressing health disparities requires acknowledgment of historical injustices and the development of policies that actively work to dismantle their lingering effects.

## **B. Mechanisms (mediators)**

### **B1. Lower Marriage Rates or Less Resources in Marriage**

Lower marriage rates among minoritized populations, particularly Black Americans, act as a mediating factor in the diminished returns on socioeconomic status [82-84]. Marriage is often associated with economic and social benefits, including financial stability, shared resources, and emotional support, which collectively contribute to improved health outcomes. However, structural factors such as mass incarceration, economic instability, and relationship strain within minoritized communities have contributed to lower marriage rates. As a result, minoritized individuals may experience fewer of the economic and health benefits that marriage can provide, contributing to weaker health outcomes compared to their White counterparts with similar socioeconomic achievements.

### **B2. Chronic Stress Across Domains**

Stress across multiple life domains—work, family, financial, and social—serves as a significant mediator that diminishes the health benefits associated with high SES for minoritized individuals [85,86]. Racialized stressors, such as discrimination, microaggressions, and systemic biases, intensify the everyday stress load, which can have cumulative adverse effects on both physical and mental health. Chronic stress activates biological pathways that increase inflammation, disrupt metabolic function, and contribute to various chronic conditions. This prolonged stress exposure reduces the protective effects of income, education, and other socioeconomic resources, ultimately undermining well-being and accelerating health disparities for minoritized populations.

### **B3. Environmental Toxins**

Exposure to environmental toxins [116], including pollutants, lead, and other hazardous substances, is disproportionately high in communities where many minoritized populations reside [119,120]. This exposure often begins in early childhood and continues throughout life, contributing to respiratory issues, cardiovascular disease, and even cognitive impairments [151]. For individuals from minoritized backgrounds, living in toxin-heavy environments can nullify the health benefits typically associated with higher SES. Regardless of income or education, those in these neighborhoods are at heightened risk of toxin-related health issues, which undermines the expected health returns from socioeconomic achievements [52,153].

### **B4. Health-Related Behaviors**

Health-related behaviors, including substance use, smoking, and violence, can act as mediators that reduce the positive impact of socioeconomic status on health for minoritized populations [42,44]. For instance, structural inequalities and limited access to mental health services may lead to coping behaviors like smoking or substance use, which counteract the expected benefits of high SES [42,44]. Additionally, exposure to community violence can contribute to chronic stress, mental health challenges, and risky behaviors. These behaviors are often responses to environmental stressors rather than individual choices, and they significantly diminish the health benefits that high SES might provide, particularly for marginalized groups.

### **B5. Living in Poor Neighborhoods**

Even high-SES Black and other minoritized individuals are more likely to reside in poorer neighborhoods with limited access to healthcare, quality schools, and safe recreational spaces [117,118]. These neighborhood characteristics are critical determinants of health, shaping both physical and mental well-being. Poor neighborhoods often have fewer resources and higher crime rates, which can increase stress, limit access to

preventive care, and reduce the likelihood of engaging in health-promoting activities [121]. As a result, even individuals with high socioeconomic status cannot fully benefit from their achievements if their neighborhood context limits their access to supportive resources, thus mediating the MDRs observed in health and well-being.

### **B6. Intergenerational Mechanisms**

Intergenerational transmission of disadvantage plays a crucial mediating role in MDRs, as the cumulative effects of historical and structural inequalities impact successive generations [25,87-89]. Economic hardships, health disparities, and exposure to discrimination often persist across generations, limiting the potential for socioeconomic gains to translate into health benefits. For instance, minoritized individuals may inherit economic disadvantage, lower educational opportunities, or poorer health from previous generations. This intergenerational cycle means that even high-SES individuals within these communities face challenges that inhibit the full realization of their socioeconomic achievements, perpetuating disparities across family lines.

### **B7. Neurocognitive Mechanisms**

Neurocognitive mechanisms, such as stress-related cognitive impairments and deficits in executive functioning, can mediate the relationship between SES and health outcomes for minoritized groups [154]. Chronic exposure to stress and discrimination can lead to neurocognitive challenges, including impairments in memory, attention, and problem-solving skills [155]. These cognitive effects may further limit the benefits of high SES. Additionally, neurocognitive impairment can increase vulnerability to mental health issues, reinforcing the diminished returns that often accompany socioeconomic achievements for marginalized populations. This evidence has recently been gathered from the ABCD study [28,88,90-93].

### **B8. Impulsivity and Emotion Regulation**

Impulsivity and difficulties with emotion regulation are important mediators that contribute to the weaker health benefits associated with SES for minoritized groups [94,95]. Chronic stress, discrimination, and adverse childhood experiences can all negatively impact emotional regulation skills, leading to greater impulsivity and difficulty managing stress in adulthood. Poor emotion regulation increases vulnerability to mental health issues, substance use, and other health-compromising behaviors, all of which counteract the protective effects of high SES. This pathway suggests that without addressing emotional and behavioral challenges, the benefits of socioeconomic success may remain limited for marginalized individuals [96-99].

### **B9. Epigenetic Risks Across the Lifecourse**

Epigenetic changes, which differ from genetic inheritance, involve the ways environmental exposures and stressors can alter gene expression over time. For minoritized individuals, chronic exposure to stress, discrimination, and environmental toxins can induce epigenetic changes that increase vulnerability to various health conditions, such as cardiovascular disease, diabetes, and mental health disorders [100]. Unlike genetic factors, epigenetic modifications are directly influenced by life experiences and can accumulate across the life course. This epigenetic risk mediates the relationship between SES and health outcomes, making it harder for high-SES minoritized individuals to fully benefit from their socioeconomic status due to the biological toll of lifelong adversity [122-125].

### **B10. Allostatic Load**

Allostatic load, or the cumulative wear and tear on the body from chronic stress exposure, is a powerful mediator that weakens the benefits of high SES on health

outcomes for marginalized groups [101]. Continuous activation of the body's stress response system can lead to physiological dysregulation, affecting cardiovascular, immune, and metabolic functions. Minoritized individuals, who often experience higher levels of stress across multiple domains, are more likely to have elevated allostatic load, even when they attain high SES. This biological burden diminishes the protective effects of socioeconomic success on health, making it a crucial mediator in understanding why minoritized populations face persistent health disparities despite their achievements.

### **C. Policy Solutions, Recommendations, and Implications**

#### **C1. Affirmative Action as a Mechanism for Equity:**

Affirmative action policies remain vital for counterbalancing the structural barriers that continue to disadvantage minoritized groups. By providing targeted opportunities in education and employment, affirmative action helps level the playing field for those who have historically been marginalized [102]. These policies are not about giving unfair advantage; rather, they are about creating fair access to resources and opportunities for all individuals, particularly those who face systemic obstacles. By actively prioritizing minoritized individuals, affirmative action supports a fairer distribution of resources, which can foster more equitable health, educational, and economic outcomes.

#### **C2. Acknowledging the Struggles of the Non-White Middle Class:**

Policy solutions may recognize the unique challenges faced by middle-class and high-achieving non-White individuals. While they have achieved economic or educational status, they often continue to experience discrimination and diminished returns on their accomplishments. Policies that address the specific needs of these individuals—who may face both racial biases and the pressures of maintaining their achievements in predominantly White spaces—are essential. Recognizing and supporting this group can help alleviate the psychological and economic strain they endure, which is often unrecognized in traditional policy frameworks focused solely on low-income populations.

#### **C3. More Comprehensive Policies:**

Policies may include efforts to address disparities with more comprehensive approach, acknowledging that the complex effects of historical and structural racism cannot be fully addressed with a one-size-fits-all solution. Substantial progress may take time and effort, it needs more resources into minority populations to address these disparities effectively [103]. This approach recognizes that policies often produce different outcomes across racial and socioeconomic groups and that policies may be adaptable to meet evolving needs.

#### **C4. Recognizing the Long Timeline for Change:**

Policies aimed at reducing disparities may be developed with the understanding that meaningful change may take decades or longer to achieve [104]. While history cannot be undone, its effects continue to shape present inequalities, and therefore, solutions need to be sustained and long-term. Policymakers should communicate openly that while progress will be gradual, persistent, well-supported policies can lead to substantial improvements over time. Accepting that disparities may persist while solutions are implemented encourages a long-term commitment to equity without unrealistic expectations of immediate results.

#### **C5. Avoiding Blame on Individual Differences:**

It is crucial for policymakers to avoid attributing racial and economic disparities to individual shortcomings, such as perceived laziness, lack of ambition, or personality traits. Such explanations overlook the significant role of structural inequities and unfairly place

the burden of disparities on those most affected by them. Effective policy solutions should instead focus on addressing the external barriers that prevent individuals from accessing the same opportunities as others, fostering an approach that is empathetic and rooted in an understanding of social context.

### **C7. Developing Multi-Sectoral Policies:**

Addressing disparities effectively requires multi-sectoral [105] approaches that engage various areas such as healthcare, education, employment, housing, and criminal justice. Coordinated policies across sectors ensure that improvements in one domain, such as education, are not undermined by barriers in another, such as labor market discrimination. A holistic, multi-sectoral strategy provides a more comprehensive framework for addressing the complex and interwoven issues that perpetuate racial and socioeconomic disparities.

### **C8. Instilling Hope and Communicating Support:**

Finally, policymakers should actively work to instill hope among minoritized populations, emphasizing that efforts to address disparities are ongoing and that their struggles are recognized at the highest levels [106,107]. This message is essential not to discourage individuals but to let them know that their challenges are seen, understood, and being addressed through meaningful policy changes. By fostering hope, policymakers can inspire resilience and reinforce the idea that while disparities exist, efforts are underway to create a fairer, more inclusive society where everyone has the chance to succeed.

## **Conclusion**

The enduring reality that “one must be twice as good to get half” encapsulates the challenges that high-SES Black individuals face in translating socioeconomic success into well-being and health benefits. Despite significant achievements in education, income, and self-efficacy, these groups experience weaker protective effects against health risks and adversity due to systemic barriers. Minorities' Diminished Returns (MDRs) theory illuminates these disparities, attributing them to structural factors, including interpersonal discrimination, social stratification, labor market biases, and historical legacies of exclusion. The MDRs framework shows that the impact of income and education is mediated and weakened by chronic stress, environmental exposures, and the physical toll of discrimination over the lifespan. To achieve genuine social, economic, and health equity, public, economic, and health policies may extend beyond merely increasing SES among marginalized populations. Comprehensive, multi-sectoral policy changes are needed to dismantle structural barriers across domains such as housing, healthcare, and the criminal justice system. Implementing policies that recognize the unique challenges facing the non-White middle class, practicing humility in policymaking, and ensuring sustained long-term commitments are crucial for reducing disparities. By acknowledging these structural realities and challenging the “bootstraps” narrative, policymakers can foster an environment where success translates equally into health and well-being for all. While the path to equity is complex and long-term, addressing these barriers is essential to creating a society where success is accessible and beneficial across racial and socioeconomic lines.

### **Authors' Contributions:**

Conceptualization, SA; resources, SA, and HZ; writing—original draft preparation, SA; writing—review and editing, Both authors have read and agreed to the published version of the manuscript.

### **Authors' Funding**

Part of Hossein Zare effort comes from the NIMHD U54MD000214. Shervin Assari is supported by funds provided by The Regents of the University of California, Tobacco-Related Diseases Research Program, Grant Number no T32IR5355. No funders had any role in the design of the current manuscript or in the analyses or interpretation of the data.

## References

- [1] Jackson, J.L. Half as good. In *The trouble with post-blackness*; Columbia University Press: 2015; pp. 194-208.
- [2] Black, E.; Kirkwood, K. Twice as Good to Get Half: Content and Context of Black Male Teachers and Administrators. In *Voicing Diverse Teaching Experiences, Approaches, and Perspectives in Higher Education*; IGI Global: 2022; pp. 17-27.
- [3] DeSante, C.D. Working twice as hard to get half as far: Race, work ethic, and America's deserving poor. *American Journal of Political Science* 2013, *57*, 342-356.
- [4] Jones, K.A. Oreos, Coconuts, Apples, and Bananas: The Problem of Racial Self-Identification amongst Young People of Color. *Rutgers Race & L. Rev.* 2005, *7*, 149.
- [5] Assari, S.; Gibbons, F.X.; Simons, R. Depression among Black Youth; Interaction of Class and Place. *Brain Sci* 2018, *8*, doi:10.3390/brainsci8060108.
- [6] Assari, S.; Gibbons, F.X.; Simons, R.L. Perceived Discrimination among Black Youth: An 18-Year Longitudinal Study. *Behav Sci (Basel)* 2018, *8*, doi:10.3390/bs8050044.
- [7] Neighbors, H.W.; Sellers, S.L.; Zhang, R.; Jackson, J.S. Goal-striving stress and racial differences in mental health. *Race and Social Problems* 2011, *3*, 51-62.
- [8] Hudson, D.; Sacks, T.; Irani, K.; Asher, A. The Price of the Ticket: Health Costs of Upward Mobility among African Americans. *Int J Environ Res Public Health* 2020, *17*, doi:10.3390/ijerph17041179.
- [9] Assari, S. Health disparities due to diminished return among black Americans: Public policy solutions. *Social Issues and Policy Review* 2018, *12*, 112-145.
- [10] Assari, S. General Self-Efficacy and Mortality in the USA; Racial Differences. *J Racial Ethn Health Disparities* 2017, *4*, 746-757, doi:10.1007/s40615-016-0278-0.
- [11] Assari, S. Race, sense of control over life, and short-term risk of mortality among older adults in the United States. *Arch Med Sci* 2017, *13*, 1233-1240, doi:10.5114/aoms.2016.59740.
- [12] Assari, S. Association between General Sense of Mastery and Income in White- and African-American Adults. *Nurs Midwifery Stud* 2019, *8*, 162-167, doi:10.4103/nms.nms\_47\_18.
- [13] Assari, S. High sense of mastery reduces psychological distress for African American women but not African American men. *Arch Gen Intern Med* 2019, *3*, 5-9.
- [14] Assari, S. Unequal Gain of Equal Resources across Racial Groups. *Int J Health Policy Manag* 2018, *7*, 1-9, doi:10.15171/ijhpm.2017.90.
- [15] Assari, S.; Caldwell, C.H. Racism, Diminished Returns of Socioeconomic Resources, and Black Middle-Income Children's Health Paradox. *JAMA pediatrics* 2021, *175*, 1287-1288, doi:10.1001/jamapediatrics.2021.3277.
- [16] Assari, S.; Burgard, S.; Zivin, K. Long-Term Reciprocal Associations Between Depressive Symptoms and Number of Chronic Medical Conditions: Longitudinal Support for Black-White Health Paradox. *J Racial Ethn Health Disparities* 2015, *2*, 589-597, doi:10.1007/s40615-015-0116-9.
- [17] Gibbs, J.T. 8 African-American Suicide: A Cultural Paradox. *Suicide and Life-Threatening Behavior* 1997, *27*, 68-79.
- [18] Keyes, C.L. The Black-White paradox in health: flourishing in the face of social inequality and discrimination. *J Pers* 2009, *77*, 1677-1706, doi:10.1111/j.1467-6494.2009.00597.x.
- [19] Mouzon, D.M. Relationships of choice: can friendships or fictive kinships explain the race paradox in mental health? *Soc Sci Res* 2014, *44*, 32-43, doi:10.1016/j.ssresearch.2013.10.007.
- [20] Pamplin, J.R., 2nd; Kezios, K.L.; Hayes-Larson, E.; Keyes, K.M.; Susser, E.S.; Factor-Litvak, P.; Link, B.G.; Bates, L.M. Explaining the Black-white depression paradox: Interrogating the Environmental Affordances Model. *Soc Sci Med* 2021, *277*, 113869, doi:10.1016/j.socscimed.2021.113869.
- [21] Rockett, I.R.; Samora, J.B.; Coben, J.H. The black-white suicide paradox: Possible effects of misclassification. *Social science & medicine* 2006, *63*, 2165-2175, doi:10.1016/j.socscimed.2006.05.017.
- [22] Assari, S. Parental Educational Attainment and Mental Well-Being of College Students; Diminished Returns of Blacks. *Brain Sci* 2018, *8*, doi:10.3390/brainsci8110193.
- [23] Assari, S. Diminished economic return of socioeconomic status for black families. *Social Sciences* 2018, *7*, 74.
- [24] Assari, S. Family Socioeconomic Position at Birth and School Bonding at Age 15; Blacks' Diminished Returns. *Behav Sci (Basel)* 2019, *9*, doi:10.3390/bs9030026.
- [25] Assari, S. Parental Educational Attainment and Academic Performance of American College Students; Blacks' Diminished Returns. *J Health Econ Dev* 2019, *1*, 21-31.
- [26] Assari, S. College Graduation and Wealth Accumulation: Blacks' Diminished Returns. *World J Educ Res* 2020, *7*, 1-18, doi:10.22158/wjer.v7n3p1.

- [27] Assari, S. Mental Rotation in American Children: Diminished Returns of Parental Education in Black Families. *Pediatric Reports* 2020, 12, 130-141.
- [28] Assari, S. Age-Related Decline in Children's Reward Sensitivity: Blacks' Diminished Returns. *Res Health Sci* 2020, 5, 112-128, doi:10.22158/rhs.v5n3p112.
- [29] Assari, S. Blacks' Diminished Health Returns of Educational Attainment: Health and Retirement Study. *J Med Res Innov* 2020, 4, doi:10.32892/jmri.212.
- [30] Assari, S. Diminished Effect of Smoking Intensity on African American and Latino Smokers' Tobacco Risk Perception. *Journal of Mental Health & Clinical Psychology* 2021, 5.
- [31] Assari, S. Minorities' Diminished Returns of Educational Attainment on Life Satisfaction among Black and Latino Adults in the United States. *Journal of Medicine, Surgery, and Public Health* 2024, 100091, doi:https://doi.org/10.1016/j.glmedi.2024.100091.
- [32] Assari, S. Diminished returns of educational attainment on life satisfaction among Black and Latino older adults transitioning into retirement. *Journal of Medicine, Surgery, and Public Health* 2024, 2, 100091, doi:https://doi.org/10.1016/j.glmedi.2024.100091.
- [33] Assari, S. Latinos' diminished returns of educational attainment on reducing food insecurity: the role of ethnic disparities in family structure and employment. *Front Public Health* 2024, 12, 1407005, doi:10.3389/fpubh.2024.1407005.
- [34] Assari, S.; Boyce, S.; Caldwell, C.H.; Bazargan, M. Parent Education and Future Transition to Cigarette Smoking: Latinos' Diminished Returns. *Front Pediatr* 2020, 8, 457, doi:10.3389/fped.2020.00457.
- [35] Assari, S.; Malek-Ahmadi, M.R.; Caldwell, C.H. Parental Education or Household Income? Which Socioeconomic Status Indicator Can Better Reduce Body Mass Index Disparities among Latino Children? *J Econ Public Financ* 2021, 7, 19-37, doi:10.22158/jepf.v7n1p19.
- [36] Bandiera, F.C.; Assari, S.; Livaudais-Toman, J.; Perez-Stable, E.J. Latino and Black smokers in the Health and Retirement Study are more likely to quit: the role of light smoking. *Tob Induc Dis* 2016, 14, 23, doi:10.1186/s12971-016-0090-y.
- [37] Assari, S.; Ayoubian, A.; Caldwell, C.H. Comparison of European, African, Asian, and other/mixed race American children for the association between household income and perceived discrimination. *International journal of travel medicine and global health* 2021, 9, 31.
- [38] Assari, S.; Boyce, S.; Bazargan, M.; Caldwell, C.H. Mathematical Performance of American Youth: Diminished Returns of Educational Attainment of Asian-American Parents. *Educ Sci (Basel)* 2020, 10.
- [39] Assari, S. Diminished Returns of Income Against Cigarette Smoking Among Chinese Americans. *Journal of health economics and development* 2019, 1, 1.
- [40] Assari, S. High Economic Stress May Explain Worse-Than-Expected Health of Highly Educated Chinese Americans. *International Journal of Travel Medicine and Global Health* 2021, 9, 183-190, doi:10.34172/ijtmgh.2021.30.
- [41] Assari, S.; Bazargan, M. Educational Attainment and Subjective Health and Well-Being; Diminished Returns of Lesbian, Gay, and Bisexual Individuals. *Behavioral Sciences* 2019, 9, 90.
- [42] Assari, S.; Bazargan, M. Education Level and Cigarette Smoking: Diminished Returns of Lesbian, Gay and Bisexual Individuals. *Behav Sci (Basel)* 2019, 9, doi:10.3390/bs9100103.
- [43] Assari, S. Income and Mental Well-Being of Middle-Aged and Older Americans: Immigrants' Diminished Returns. *International Journal of Travel Medicine and Global Health* 2020, 8, 37-43, doi:10.34172/ijtmgh.2020.06.
- [44] Assari, S. Socioeconomic Status and Current Cigarette Smoking Status: Immigrants' Diminished Returns. *Int J Travel Med Glob Health* 2020, 8, 66-72, doi:10.34172/IJTMGH.2020.11.
- [45] Assari, S. Household Income and Children's Depressive Symptoms: Immigrants' Diminished Returns. *Int J Travel Med Glob Health* 2020, 8, 157-164, doi:10.34172/ijtmgh.2020.27.
- [46] Assari, S.; Akhlaghipour, G.; Boyce, S.; Bazargan, M.; Caldwell, C.H. Parental Human Capital and Adolescents' Executive Function: Immigrants' Diminished Returns. *Medical research archives* 2020, 8.
- [47] Assari, S.; Cobb, S.; Cuevas, A.G.; Bazargan, M. Diminished Health Returns of Educational Attainment Among Immigrant Adults in the United States. *Front Psychiatry* 2020, 11, 535624, doi:10.3389/fpsy.2020.535624.
- [48] Assari, S.; Najand, B. Anti-immigrant Sentiments and Immigrants' Happiness. *International Journal of Travel Medicine and Global Health* 2023, 11, 369-381.
- [49] Assari, S.; Perez, M.U.; Johnson, N.; Williams, N.R.; Carrillo, E.; Garcia, L.; Hollis, X.T. Education Level and Self-rated Health in the United States: Immigrants' Diminished Returns. *Int J Travel Med Glob Health* 2020, 8, 116-123, doi:10.34172/ijtmgh.2020.20.
- [50] Assari, S., Jahromi, M. and Zare, H., 2025. Uneven Impact of Maternal Education at Birth on High School Grades of Black and White Students. *Open journal of educational research*, 5(1), p.54.
- [51] Assari, S. American Indian, Alaska Native, Native Hawaiian, and Pacific Islander Children's Body Mass Index: Diminished Returns of Parental Education and Family Income. *Res Health Sci* 2020, 5, 64-84, doi:10.22158/rhs.v5n1p64.
- [52] Assari, S.; Bazargan, M. Protective Effects of Educational Attainment Against Cigarette Smoking; Diminished Returns of American Indians and Alaska Natives in the National Health Interview Survey. *International Journal of Travel Medicine and Global Health* 2019.
- [53] Assari, S.; Zare, H. Unequal Effect of Educational Attainment on Reducing Poverty and Welfare; Diminished Returns of American Indian/Alaska Native Populations. *J Rehabil Ther* 2024, 6, 1-11, doi:10.29245/2767-5122/2024/2.1143.

- [54] Assari, S.; Bazargan, M. Unequal Effects of Educational Attainment on Workplace Exposure to Second-Hand Smoke by Race and Ethnicity; Minorities' Diminished Returns in the National Health Interview Survey (NHIS). *J Med Res Innov* 2019, 3, doi:10.32892/jmri.179.
- [55] Assari, S.; Bazargan, M. Minorities' diminished returns of educational attainment on hospitalization risk: National Health Interview Survey (NHIS). *Hospital practices and research* 2019, 4, 86.
- [56] Zare, H.; Assari, S. Non-Hispanic Black Americans' Diminished Protective Effects of Educational Attainment and Employment against Cardiometabolic Diseases: NHANES 1999-2016. *Austin J Public Health Epidemiol* 2021, 8.
- [57] Assari, S. Combined Effects of Race and Educational Attainment on Physician Visits Over 24 Years in a National Sample of Middle-Aged and Older Americans. *Hospital practices and research* 2020, 5, 17-23.
- [58] Assari, S.; Sonnega, A.; Zare, H. Race, College Graduation, and Time of Retirement in the United States: A Thirty-Year Longitudinal Cohort of Middle-Aged and Older Adults. *Open Journal of Educational Research* 2024, 4, 228-242.
- [59] Assari, S.; Zare, H.; Sonnega, A. Racial Disparities in Occupational Distribution Among Black and White Adults with Similar Educational Levels: Analysis of Middle-Aged and Older Individuals in the Health and Retirement Study. *J Rehabil Ther* 2024, 6, 1-11, doi:10.29245/2767-5122/2024/1.1141.
- [60] Assari, S.; Caldwell, C.H. High Risk of Depression in High-Income African American Boys. *J Racial Ethn Health Disparities* 2018, 5, 808-819, doi:10.1007/s40615-017-0426-1.
- [61] Assari, S.; Sheikhattari, P. Racialized influence of parental education on adolescents' tobacco and marijuana initiation: Mediating effects of average cortical thickness. *Journal of Medicine, Surgery, and Public Health* 2024, 100107.
- [62] S, A. Parental Educational Attainment and Frequency of Marijuana Use in Youth: Hispanics' Diminished Returns. *Journal of Education and Culture Studies* 5(6):p47 2021, 5, doi:DOI: 10.22158/jecs.v5n6p47.
- [63] Assari, S.; Najand, B.; Sheikhattari, P. Household Income and Subsequent Youth Tobacco Initiation: Minorities' Diminished Returns. *Journal of Medicine, Surgery, and Public Health* 2024, 100063, doi:https://doi.org/10.1016/j.glmedi.2024.100063.
- [64] Assari S, C.H., Bazargan M. Educational Attainment Unequally Delays Smoking Initiation for Non-Hispanic Black and Non-Hispanic White Americans. *International Journal of Biomedical Engineering and Clinical Science* 2019, doi:10.11648/j.XXXX.2019XXXX.XX.
- [65] Assari, S. Understanding America: Unequal Economic Returns of Years of Schooling in Whites and Blacks. *World J Educ Res* 2020, 7, 78-92, doi:10.22158/wjer.v7n2p78.
- [66] Rodriguez, J.M.; Koo, C.; Di Pasquale, G.; Assari, S. Black-White differences in perceived lifetime discrimination by education and income in the MIDUS Study in the U.S. *J Biosoc Sci* 2023, 55, 795-811, doi:10.1017/s0021932022000360.
- [67] Zare, H.; Assari, S. Non-hispanic Black Americans' diminished protective effects of educational attainment and employment against cardiometabolic diseases: NHANES 1999-2016. *Austin journal of public health and epidemiology* 2021, 8.
- [68] Assari, S.; Lapeyrouse, L.M.; Neighbors, H.W. Income and Self-Rated Mental Health: Diminished Returns for High Income Black Americans. *Behav Sci (Basel)* 2018, 8, doi:10.3390/bs8050050.
- [69] Assari, S.; Mistry, R. Diminished Return of Employment on Ever Smoking Among Hispanic Whites in Los Angeles. *Health Equity* 2019, 3, 138-144, doi:10.1089/heq.2018.0070.
- [70] Barsha, R.A.A.; Assari, S.; Hossain, M.B.; Apata, J.; Sheikhattari, P. Black Americans' Diminished Return of Educational Attainment on Tobacco Use in Baltimore City. *J Racial Ethn Health Disparities* 2023, 10, 3178-3187, doi:10.1007/s40615-023-01805-0.
- [71] Assari, S. Protective Effects of Maternal Education against Low Birth Weight Deliveries: Blacks' Diminished Returns. *Res Health Sci* 2020, 5, 1-17, doi:10.22158/rhs.v5n4p1.
- [72] Bakhtiari, E. Diminished Returns in Europe: Socioeconomic Status and Ethno-Racial Health Disparities Across 30 Countries in the European Social Survey. *Journal of Racial and Ethnic Health Disparities* 2022, 9, 2412-2426, doi:10.1007/s40615-021-01178-2.
- [73] Assari, S. Does School Racial Composition Explain Why High Income Black Youth Perceive More Discrimination? A Gender Analysis. *Brain Sci* 2018, 8, doi:10.3390/brainsci8080140.
- [74] Assari, S. Social Epidemiology of Perceived Discrimination in the United States: Role of Race, Educational Attainment, and Income. *Int J Epidemiol Res* 2020, 7, 136-141, doi:10.34172/ijer.2020.24.
- [75] Assari, S.; Ayoubian, A.; Caldwell, C. Comparison of European, African, Asian, and Other/Mixed Race American Children for the Association Between Household Income and Perceived Discrimination. *International Journal of Travel Medicine and Global Health* 2021, 9, 31-38, doi:10.34172/ijtmgh.2021.06.
- [76] Assari, S.; Cochran, S.D.; Mays, V.M. Money Protects White but Not African American Men against Discrimination: Comparison of African American and White Men in the Same Geographic Areas. *Int J Environ Res Public Health* 2021, 18, doi:10.3390/ijerph18052706.
- [77] Assari, S.; Lankarani, M.M.; Caldwell, C.H. Does Discrimination Explain High Risk of Depression among High-Income African American Men? *Behav Sci (Basel)* 2018, 8, doi:10.3390/bs8040040.
- [78] Assari, S.; Moghani Lankarani, M. Workplace Racial Composition Explains High Perceived Discrimination of High Socioeconomic Status African American Men. *Brain Sci* 2018, 8, doi:10.3390/brainsci8080139.
- [79] Assari, S.; Zare, H. Black-White Differences in The Effects of Parental Education on College Students' Beliefs about Racial Discrimination. *Open Journal of Educational Research* 2024, 4, 164-173.

- [80] Assari, S. Black Americans' Diminished Health Returns of Professional Occupations: A Thirty-Year Follow-Up Study of Middle-Aged and Older Adults. *J Racial Ethn Health Disparities* 2024, doi:10.1007/s40615-024-02034-9.
- [81] David, E.R.; Schroeder, T.M.; Fernandez, J. Internalized racism: A systematic review of the psychological literature on racism's most insidious consequence. *Journal of Social Issues* 2019, 75, 1057-1086.
- [82] Assari, S.; Bazargan, M. Being married increases life expectancy of White but not Black Americans. *Journal of Family & Reproductive Health* 2019, 13, 132.
- [83] Assari, S.; Caldwell, C.H.; Zimmerman, M.A. Family Structure and Subsequent Anxiety Symptoms; Minorities' Diminished Return. *Brain Sci* 2018, 8, doi:10.3390/brainsci8060097.
- [84] Assari, S. Latinos' diminished returns of educational attainment on reducing food insecurity: the role of ethnic disparities in family structure and employment. *Frontiers in Public Health* 2024, 12, doi:10.3389/fpubh.2024.1407005.
- [85] Shervin, A. Parental Education and Spanking of American Children: Blacks' Diminished Returns. *World journal of educational research (Los Angeles, Calif.)* 2020, 8.
- [86] Assari, S. Family Socioeconomic Status and Exposure to Childhood Trauma: Racial Differences. *Children* 2020, 7, 57.
- [87] Assari, S. Parental education better helps white than black families escape poverty: National survey of children's health. *Economies* 2018, 6, 30.
- [88] Assari, S. Parental Education, Household Income, and Cortical Surface Area among 9-10 Years Old Children: Minorities' Diminished Returns. *Brain Sci* 2020, 10, doi:10.3390/brainsci10120956.
- [89] Assari, S. Parental Education, Household Income, and Cortical Surface Area among 9-10 Years Old Children: Minorities' Diminished Returns. *Brain Sciences* 2020, 10, 956.
- [90] Assari, S. Social Determinants of Delayed Gratification among American Children. *Casp J Neurol Sci* 2020, 6, 181-189, doi:10.32598/cjns.6.22.2.
- [91] Assari, S. Dimensional Change Card Sorting of American Children: Marginalization-Related Diminished Returns of Age. *Child Teenagers* 2020, 3, 72-92, doi:10.22158/ct.v3n2p72.
- [92] Assari, S.; Akhlaghipour, G. Not Race or Age but Their Interaction Predicts Pre-Adolescents' Inhibitory Control. *Child Teenagers* 2020, 3, 50-71, doi:10.22158/ct.v3n2p50.
- [93] Assari, S.; Boyce, S. Family's Subjective Economic Status and Children's Matrix Reasoning: Blacks' Diminished Returns. *Res Health Sci* 2021, 6, 1-23, doi:10.22158/rhs.v6n1p1.
- [94] Assari, S. Parental Education on Youth Inhibitory Control in the Adolescent Brain Cognitive Development (ABCD) Study: Blacks' Diminished Returns. *Brain Sci* 2020, 10, doi:10.3390/brainsci10050312.
- [95] Assari, S.; Akhlaghipour, G. Not Race or Age but Their Interaction Predicts Pre-Adolescents' Inhibitory Control. *Children and teenagers* 2020, 3, 50.
- [96] Assari, S.; Boyce, S.; Bazargan, M. Subjective Family Socioeconomic Status and Adolescents' Attention: Blacks' Diminished Returns. *Children* 2020, 7, 80.
- [97] Assari, S.; Caldwell, C.H. Family Income at Birth and Risk of Attention Deficit Hyperactivity Disorder at Age 15: Racial Differences. *Children (Basel)* 2019, 6, doi:10.3390/children6010010.
- [98] Assari, S.; Caldwell, C.H.; Mincy, R. Family Socioeconomic Status at Birth and Youth Impulsivity at Age 15; Blacks' Diminished Return. *Children (Basel)* 2018, 5, doi:10.3390/children5050058.
- [99] Assari, S.; Sheikhattari, P. Role of Impulsivity in Explaining Social Gradient in Youth Tobacco Use Initiation: Does Race Matter? *Open Journal of Neuroscience* 2024, 2, 1-13.
- [100] Assari, S.; Zare, H. Poverty Status at Birth Predicts Epigenetic Changes at Age 15. *Journal of Biomedical and Life Sciences* 2024, 4, 1-14.
- [101] Zare, H.; Najand, B.; Fugal, A.; Assari, S. Allostatic load in the US general population: Race and educational intersection. *Public Health Pract (Oxf)* 2023, 6, 100425, doi:10.1016/j.puhp.2023.100425.
- [102] Crosby, F.J.; Iyer, A.; Sincharoen, S. Understanding affirmative action. *Annu. Rev. Psychol.* 2006, 57, 585-611.
- [103] Ceci, S.J.; Papierno, P.B. The rhetoric and reality of gap closing: when the "have-nots" gain but the "haves" gain even more. *American Psychologist* 2005, 60, 149.
- [104] Williams, D.R. Miles to go before we sleep: Racial inequities in health. *Journal of health and social behavior* 2012, 53, 279-295.
- [105] Cairney, P.; Kippin, S.; St Denny, E.; Mitchell, H. Policy design for territorial equity in multi-level and multi-sectoral political systems: Comparing health and education strategies. *Regional Science Policy & Practice* 2022, 14, 1051-1062.
- [106] Dopp, A.R.; Lantz, P.M. Moving upstream to improve children's mental health through community and policy change. *Administration and Policy in Mental Health and Mental Health Services Research* 2020, 47, 779-787.
- [107] Lantz, P.M. The Medicalization of Population Health: Who Will Stay Upstream? *Milbank Q* 2019, 97, 36-39, doi:10.1111/1468-0009.12363.
- [108] Cobb, S.; Javanbakht, A.; Khalifeh Soltani, E.; Bazargan, M. and Assari, S. Racial difference in the relationship between health and happiness in the United States. *Psychology research and behavior management*, 2020, pp.481-490.
- [109] Reiss, F. Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. *Social science & medicine* 2013, 90, pp.24-31.
- [110] Assari S, Donovan A. Trauma Erodes Financial Returns of Educational Attainment. *Open journal of educational research*. 2025 Feb 14;5(1):40.

- [111] Bailey, Z.D., Krieger, N., Agénor, M., Graves, J., Linos, N. and Bassett, M.T. Structural racism and health inequities in the USA: evidence and interventions. *The lancet* 2017, 389(10077), pp.1453-1463.
- [112] Williams, D.R. Race, socioeconomic status, and health the added effects of racism and discrimination. *Annals of the New York Academy of Sciences* 1999, 896(1), pp.173-188.
- [113] Williams, D.R., Lawrence, J.A. and Davis, B.A. Racism and health: evidence and needed research. *Annual review of public health* 2019, 40(1), pp.105-125.
- [114] Krieger, N. Structural racism, health inequities, and the two-edged sword of data: structural problems require structural solutions. *Frontiers in public health* 2021, 9, p.655447.
- [115] Krieger, N. Analyzing structural racism and its health impacts: it's about time. *American Journal of Epidemiology* 2024, p.kwae392.
- [116] Gochfeld, M., & Burger, J. Disproportionate exposures in environmental justice and other populations: the importance of outliers. *American journal of public health* 2011, 101(S1), S53-S63.
- [117] Boylan, J. M., & Robert, S. A. Neighborhood SES is particularly important to the cardiovascular health of low SES individuals. *Social Science & Medicine* 2017, 188, 60-68.
- [118] Williams, D. R., Mohammed, S. A., Leavell, J., & Collins, C. Race, socioeconomic status, and health: complexities, ongoing challenges, and research opportunities. *Annals of the new York Academy of Sciences* 2010, 1186(1), 69-101.
- [119] US Environmental Protection Agency. Sociodemographic Data Used or Identifying Potentially Highly Exposed Populations. Washington, DC: US Environmental Protection Agency; 1999.
- [120] National Research Council. Science and Decisions: Advancing Risk Assessment. Washington, DC: National Academies Press; 2009.
- [121] Jackson, D. B., & Vaughn, M. G. Promoting health equity to prevent crime. *Preventive Medicine* 2018, 113, 91-94.
- [122] Assari S, Zare H. Poverty Status at Birth Predicts Epigenetic Changes at Age 15. *J Biomed Life Sci.* 2024;4(1):989. doi: 10.31586/jbls.2024.989. Epub 2024 Jul 16. PMID: 39087138; PMCID: PMC11288982.
- [123] Assari S, Pallera JA. Depression, Subjective Health, Obesity, and Multimorbidity are Associated with Epigenetic Age Acceleration. *J Biomed Life Sci.* 2025;5(1):42-57. doi: 10.31586/jbls.2025.6041. Epub 2025 Apr 3. PMID: 40235522; PMCID: PMC11999669.
- [124] Assari S, Dezfuli M, Peyrovinasab A, Zare H. The Long Shadow of Early Poverty: Poverty at Birth, Epigenetic Changes at Age 15, And Youth Outcomes at Age 22. *Curr Res Public Health.* 2024;4(1):26-40. doi: 10.31586/crph.2024.990. Epub 2024 Oct 31. PMID: 39605992; PMCID: PMC11600004.
- [125] Assari S, Zare H. Race, Poverty Status at Birth, and DNA Methylation of Youth at Age 15. *Glob J Epidemiol Infect Dis.* 2024;4(1):8-19. doi: 10.31586/gjeid.2024.988. Epub 2024 Jul 12. PMID: 39055525; PMCID: PMC11271691.
- [126] Allgood KL, Fleischer NL, Assari S, Morenoff J, Needham BL. School Segregation During Adolescence is Associated with Higher 30-Year Cardiovascular Risk of Black but not White Young Adults. *J Racial Ethn Health Disparities.* 2024 Sep 16. doi: 10.1007/s40615-024-02135-5. Epub ahead of print. PMID: 39298095.
- [127] Assari S, Zare H. Walking the Divide: A Public Health Journey from Manhattan to Harlem. *J Soc Math Hum Eng Sci.* 2024;3(1):7-15. doi: 10.31586/jsmhes.2024.1018. Epub 2024 Aug 11. PMID: 39219735; PMCID: PMC11364259.
- [128] Bonilla-Silva, E. and Embrick, D.G. "Every place has a ghetto...": The significance of whites' social and residential segregation. *Symbolic Interaction* 2007, 30(3), pp.323-345.
- [129] Young, I.M. Residential segregation and differentiated citizenship. *Citizenship studies* 1999, 3(2), pp.237-252.
- [130] White, K. and Borrell, L.N. Racial/ethnic residential segregation: framing the context of health risk and health disparities. *Health & place* 2011, 17(2), pp.438-448.
- [131] Quillian, L. Does segregation create winners and losers? Residential segregation and inequality in educational attainment. *Social Problems* 2014, 61(3), pp.402-426.
- [132] Owens, A. Unequal opportunity: School and neighborhood segregation in the USA. *Race and Social Problems* 2020, 12(1), pp.29-41.
- [133] Mickelson, R.A., Bottia, M. and Southworth, S. School choice and segregation by race, class, and achievement. 2008.
- [134] Johnson Jr, O. Assessing neighborhood racial segregation and macroeconomic effects in the education of African Americans. *Review of educational research* 2010, 80(4), pp.527-575.
- [135] Jud, G.D. and Walker, J.L. Discrimination by race and class and the impact of school quality. *Social Science Quarterly* 1977, 57(4), pp.731-749.
- [136] Evans, G.W. and Cassells, R.C. Childhood poverty, cumulative risk exposure, and mental health in emerging adults. *Clinical Psychological Science* 2014, 2(3), pp.287-296.
- [137] Najman, J.M., Wang, W., Plotnikova, M., Mamun, A.A., McIntyre, D., Williams, G.M., Scott, J.G., Bor, W. and Clavarino, A.M. Poverty over the early life course and young adult cardio-metabolic risk. *International Journal of Public Health* 2020, 65, pp.759-768.
- [138] Wells, N.M., Evans, G.W., Beavis, A. and Ong, A.D. Early childhood poverty, cumulative risk exposure, and body mass index trajectories through young adulthood. *American journal of public health* 2010, 100(12), pp.2507-2512.
- [139] Raphael, D. Poverty in childhood and adverse health outcomes in adulthood. *Maturitas* 2011, 69(1), pp.22-26.
- [140] David, E.R., Schroeder, T.M. and Fernandez, J. Internalized racism: A systematic review of the psychological literature on racism's most insidious consequence. *Journal of Social Issues* 2019, 75(4), pp.1057-1086.

- 
- [141] Bivens, D. Internalized racism: A definition. *Boston: The Women's Theological Center*. 1995.
- [142] Huber, L.P., Johnson, R.N. and Kohli, R. Naming racism: A conceptual look at internalized racism in US schools. *Chicano-Latino L. Rev* 2006., 26, p.183.
- [143] James, D. An initial framework for the study of internalized racism and health: Internalized racism as a racism-induced identity threat response. *Social and Personality Psychology Compass* 2022, 16(11), p.e12712.
- [144] James, D. Health and health-related correlates of internalized racism among racial/ethnic minorities: a review of the literature. *Journal of racial and ethnic health disparities* 2020, 7(4), pp.785-806.
- [145] Gee, G.C. and Ford, C.L. Structural racism and health inequities: Old issues, New Directions1. *Du Bois review: social science research on race* 2011, 8(1), pp.115-132.
- [146] Groos, M., Wallace, M., Hardeman, R. and Theall, K.P. Measuring inequity: a systematic review of methods used to quantify structural racism. *Journal of health disparities research and practice* 2018, 11(2), p.13.
- [147] Roback, J. Southern labor law in the Jim Crow era: exploitative or competitive?. *The University of Chicago Law Review* 1984, 51(4), pp.1161-1192.
- [148] Lyons, D. and Brown, M.K. *Redress for historical injustices in the United States: On reparations for slavery, Jim Crow, and their legacies*. Duke University Press. 2007.
- [149] Hassett-Walker, C. How you start is how you finish? The slave patrol and Jim Crow origins of US policing. *Human Rights* 2021, 46(2), pp.6-8.
- [150] Broussard, P.A. Black women's post-slavery silence syndrome: A twenty-first century remnant of slavery, Jim Crow, and systemic racism-who will tell her stories. *J. Gender Race & Just* 2013, 16, p.373.
- [151] Grigg, J. Environmental toxins; their impact on children's health. *Archives of disease in childhood* 2004, 89(3), pp.244-250.
- [152] Bell, S.G. and Codd, G.A. Cyanobacterial toxins and human health. *Reviews and Research in Medical Microbiology* 1994, 5(4), pp.256-264.
- [153] Cohen, M. Environmental toxins and health: the health impact of pesticides. *Australian family physician* 2007, 36(12).
- [154] Martinez, M.N., Murphy, E.R., Gallagher, M.W., Woods, S.P., Arboleda-Rios, P., Falcón, L.M. and Medina, L.D. The role of stress, perceived discrimination, and skin tone on cognitive performance in Puerto Rican adults. *Cultural Diversity & Ethnic Minority Psychology* 2025.
- [155] Barnes, L.L., Lewis, T.T., Begeny, C.T., Yu, L., Bennett, D.A. and Wilson, R.S. Perceived discrimination and cognition in older African Americans. *Journal of the International Neuropsychological Society* 2012, 18(5), pp.856-865.