The Intergenerational Transmission of Discrimination: Children's Experiences of Unfair Treatment and Their Mother's Health at Midlife

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INTRODUCTION

Life expectancy in the United States has been steadily increasing (Murphy et al. 2017), yet, racial disparities in health remain entrenched and, in some cases, are growing (Bahn et al. 2015; Kramer et al. 2015; Llungvall & Zimmerman 2012; NCHS 2016; Singh et al. 2015). Most nonwhite populations experience worse health across a wide range of outcomes compared to their White counterparts, with African Americans and Hispanics displaying some of the highest rates of morbidity and mortality in the U.S (NCHS 2016). One explanation for these persistent inequalities delineates the role that exposure to discrimination (i.e. unfair treatment) plays in the unequal distribution of health across race (Williams & Sternthal 2010). A robust and continually expanding body of literature now exists to document the association between unfair treatment and suboptimal mental and physical functioning (Lewis et al. 2015).

One aspect of the relationship between discrimination and health that remains vastly understudied concerns whether and how the negative effects of unfair treatment can be passed from one generation to the next—for example, from mothers to children as well as from children to mothers. These intergenerational processes are critical to understanding the long-term consequences of discrimination on population health (Umberson et al. 2017). While important, almost all of the extant research that investigates how exposure to discrimination in one generation influences the health of another generation focuses on maternal to infant transmission, wherein mothers' experiences of unfair treatment are associated with the health of their babies (Chae et al. 2018; Collins et al. 2000; Collins et al. 2004; Dole et al. 2003; Earnshaw et al. 2013; Lauderdale 2006; Mustillo et al. 2004; Novak et al. 2017; Orchard & Price 2017). At this time, we know of no study that (1) examines whether these critical intergenerational processes occur in the opposite direction – from child to mother and/or (2) links the experiences of older children,

specifically adolescents and young adults, to health outcomes among mothers at later lifecourse stages, such as midlife. We argue that in order to obtain a complete picture of the complex ways discrimination influences population health outcomes, particularly among women, it is critical to explore how children's discrimination patterns shape maternal wellbeing.

The current study was designed to fill these critical gaps in the existing literature, thus expanding our understanding of how discrimination can serve to erode the health of family members as well as the individual who directly experiences this critical race-related stressor. We use a merged life course and stress process theoretical approach (Umberson et al. 2008) in order to best examine the negative health consequences of this type of intergenerational exposure. To this end, we combine data from National Longitudinal Survey of Youth 1979 (NLSY79) with information from the corresponding young adults study (NLSY79-YA) to determine the extent to which adolescents' and young adults' experiences of unfair treatment negatively influences their mothers' health and wellbeing.

BACKGROUND

U.S. health disparities across race are a persistent social problem that is both a source and symptom of racial inequalities. Excessive levels of morbidity and mortality among nonwhite populations, particularly African Americans and Hispanics, are primarily the result of serious chronic illnesses, such as hypertension, obesity, and diabetes (Elo et al. 2017; Geronimus et al. 2011; Murray et al. 2006; Riddell et al. 2018) and account for almost 24 billion dollars in additional health care spending annually (Waidmann 2009). Thus, a more robust understanding of the underlying social conditions that drive these stark racial disparities in health is a national priority that would reduce racial disparities across a wide range of outcomes.

Stress theory provides one explanation for higher rates of morbidity and mortality among nonwhites by emphasizing the role that exposure to discrimination (i.e. unfair treatment) plays in the unequal distribution of health across race (see Lewis et al. 2015 for a recent review). A robust and continually expanding body of literature documents the association between unfair treatment and suboptimal physical functioning via stress mechanisms (Hicken et al. 2018; Krieger 2014; Lewis et al. 2015; Phelan & Link 2015; Williams & Mohammed 2013; Williams & Sternthal 2010), particularly among African Americans. For example, we now know that individuals who experience more frequent instances of discrimination have higher levels of stress, evidenced by have slower blood pressure recovery times, higher levels of inflammatory markers, and adhere to worse sleep patterns (Hicken et al. 2013; Kershaw et al. 2016; Moody et al. 2016; Sims et al. 2016). Even more compelling evidence is provided by studies that have shown a positive association between exposure to unfair treatment and telomere shortening (Chae et al. 2014, 2016; Lee et al. 2017; Liu & Kawachi 2017), thus directly linking this type of race-related stressor to accelerated cellular senesance.

While stress theory and research are central to our understanding of how discrimination contributes to population health disparities, life course theory suggests that the health of one generation is strongly connected to the health of another — with the health of parents and children especially inextricably linked (Umberson et al. 2010). For example, research suggests that mothers who have children with serious healthcare needs often experience rapid, health declines of their own, including accelerating biological aging (Epel et al. 2004, 2006). However, almost all of the existing studies that investigate the intergenerational transmission of the health effects of discrimination focuses on maternal-to-infant transmission, whereby experiences of unfair treatment among mothers are captured and the subsequent health of their babies, often

soon after birth, is assessed (Collins et al. 2000; Collins et al. 2004; Dole et al. 2003; Earnshaw et al. 2013; Lauderdale 2006; Mustillo et al. 2004; Novak & Geronimus 2017).

At this time, we know of no study that (1) investigates whether these critical intergenerational processes occur in the opposite direction – from child to mother and/or (2) links the experiences of older children, specifically adolescents and young adults, to health outcomes among mothers at later lifecourse stages, such as midlife. We argue that in order to fully understand how racial disparities in health during midlife women consistently emerge, even among relatively healthy subgroups, and follow remarkably well-known patterns whereby they increase rapidly over time, we must recognize the "linked lives" that mothers and children still share during this critical lifecourse stage. Studies with an eye towards explaining the intergenerational impacts of unfair treatment could help explain why rates of morbidity and mortality among middle-class nonwhites remain excessive despite having achieved better than average levels of socioeconomic status (SES) or why racial disparities in health are consistently more pronounced among nonpoor, as opposed to poor, subgoups (Colen et al. 2018; Williams et al. 2016). Below, we theorize the relationship between intergenerational ties, discrimination, and health.

The Intergenerational Transmission of Stress and Discrimination

Recent studies have begun to examine the complex processes that undergird the association between discrimination and poor health by focusing on the biophysiological mechanisms that are likely to link exposures to unfair treatment to higher rates of disability and death, asking how experiences of discrimination become embodied and "get under the skin" via stress processes. We now know that individuals who encounter more frequent instances of unfair treatment are

significantly more likely to exhibit worse cardiovascular reactivity, higher levels of inflammation, and take longer to return to a steady state of physiological functioning as a result of the stress response than individuals who experience fewer instances of unfair treatment (Goosby et al. 2015; Lewis et al. 2010; Slopen & Williams 2014; Smart Richman et al. 2010; Stepanikova et al. 2017; Szanton et al. 2015). Moreover, the negative health effects of discrimination can be further acerbated by engagement in problematic health behaviors as well as less or lower quality sleep, which have been shown to occur with greater frequency following instances of unfair treatment (Borrell et al. 2013, 2010; Lewis et al. 2013; Sims et al. 2015; Verissimo et al. 2014). Taken as a whole, these findings provide convincing evidence that the stress response is a critical pathway through which discrimination erodes the health of individuals and contributes to population health disparities on a societal level.

While it is clear that the sustained activation of the stress response is implicated in linking exposure to discrimination to suboptimal population health outcomes (Goosby et al. 2018), what is less well known is the extent to which HPA reactivity as a result of unfair treatment can influence wellbeing *across* generations. A life course approach suggests that of the strongest social ties is that which exists between a mother and child, even as the latter enters adolescence or emerging adulthood and begins to establish his/her own independence. Thus, we expect that the intergenerational effects of unfair treatment would be most relevant and particularly pronounced when examining mother/child pairs as opposed to other types of social or familial bonds. It is to this body of evidence that we now turn.

A small but growing area of research examines instances of discrimination among mothers and subsequent health outcomes among their infant children (Rosenthal & Lobel 2011). Some of these studies directly measure experiences of unfair treatment (Collins et al. 2000, 2004;

Dole et al. 2004; Earnshaw et al. 2013), while others exploit natural experiments, during which periods of maternal deprivation and/or stress became more frequent, to approximate these detrimental exposures (Lauderdale 2006; Novak & Geronimus 2017; Torche 2011). For example, Mustillo et al. (2004) find that mothers who reported 3 or more experiences of racial discrimination were 5 and 3 times more likely to give birth to a low birthweight or preterm baby, respectively, compared to mothers who reported no experiences of racial discrimination. Research that investigates the association between discrimination, maternal stress, and negative infant health following a dramatic, precipitating event reveals comparable findings. Lauderdale (2006) notes that the probability of low birthweight and preterm birth significantly increased from the 6-month period before September 11th to the 6-month period after this event, but only among children born to Arab and Arab-American women. Novak et al. (2017) report declines in infant health of similarly large magnitudes among Hispanics following one of the largest immigration raids in U.S. history.

The Health Effects of Discrimination – Child to Mother Transmission

Although there is preliminary evidence that the negative health consequences of discrimination extends across generations, previous research only consider that these lifecourse and stress processes work in one direction – namely, from mother to child. Building on these studies linking maternal stress to child wellbeing, we argue that the intergenerational health effects of discrimination are likely to operate in the other direction, from child to mother.

How might the negative health effects of unrelenting stress be transmitted from child to mother, particularly in ways that vary by race? Generally speaking, nonwhite mothers must confront, on a daily basis, the likelihood that their children will be treated unfairly as a direct

result of their race. Research shows this worry is constant and unrelenting, demanding that African American and Hispanic mothers maintain excessive levels of oversight and hypervigilance even when a direct threat of discrimination is not imminent (Elliot & Asseltine 2013; Nuru-Jeter et al. 2009; Lee and Hicken 2016). Thus, stress levels among nonwhite mothers are rarely given a chance to recover and return to their original steady state (i.e. homeostasis).

It is just this type of relentless environmental psychosocial stressor that has been implicated in the worst types of population health outcomes as well as the development of persistent racial inequalities in physical wellbeing (Goosby et al. 2018; Hicken et al. 2014, 2018; Juster et al. 2010; Williams et al. 2003). Moreover, we suspect that these intergenerational effects of on maternal health will be particularly problematic for mothers of adolescents and young adults, who seek more independence, spend less time under direct parental supervision, engage in more risk-taking behaviors, and rely more heavily on peer as opposed to familial networks for social cues and support (Umberson & Crosnoe 2010). In particular, for nonwhite children in their teens and early twenties, independent engagement with law enforcement as well as school administrators and teachers could be important social sources of unfair treatment. Thus, the first hypothesis to be tested in the current study is as follows:

H1: Experiences of discrimination among adolescent and young adult children will be negatively associated with their mother's health at midlife.

Unique Sources of Stress for Nonwhite Mothers

Taken together, stress theory suggests a child's experiences with discrimination will erode the health of their mothers. This is likely to occur in a number of social settings in which nonwhite children face especially elevated risks of encountering unfair treatment. A key source of maternal

stress for nonwhite mothers is children's contact with law enforcement and/or the criminal justice system. In the U.S., police oversight, arrests, and incarceration are not equally distributed across various segments of society but are more frequent among African American and Hispanic communities, especially those with high levels of concentrated disadvantage (Alexander 2012; Peterson & Krivo 2010). As a result, mothers of Black and Latino children often report having to maintain a constant state of vigilance regarding their children's whereabouts and possible interactions with law enforcement as a way to ensure their safety and survival (Jackson et al. 2001; Nuru-Jeter et al. 2009; Vines et al. 2006).

This is particularly true for mothers of adolescents and young adults, who push for more independence and less parental oversight but do not yet have the decision-making capabilities to prevent them from engaging in unsafe risk-taking behaviors (Crosnoe & Johnson 2011; Sampson & Laub 2005). Moreover, African American and Hispanic mothers' concerns for their children's safety and possible interactions with police have been amplified in recent years due to an increase in third party policing (Desmond & Valdez 2012), expansion of stop and frisk policies (Sewell & Jefferson 2016), and widespread sharing of the mistreatment and sometimes death of nonwhite men and women at the hands of law enforcement on social media platforms (Carney 2016; Desmond et al. 2016).

Maternal concern for nonwhite children's exposure to unfair treatment is not limited to issues related to police brutality, unequal approaches to law enforcement, or mass incarceration. Another key area of research has convincingly demonstrated that nonwhite children encounter remarkably different learning environments in educational settings, particularly in response to problem behaviors – so much so, that the term "school to prison pipeline" has been coined to capture stark racial disparities in approaches to school discipline (Heitzeg 2016; Hirschfield

2008; Rios 2011). African American mothers must confront the real possibility that their children will be stereotyped as trouble makers in school and incorrectly diverted to special education classes or, even worse, suspended or expelled for behaviors that are often tolerated when White children engage in the same ones (Ferguson 2010). Ramey (2018) notes that not only are African American children more likely to be punished for similar problem behaviors in school than similarly aged white children, but these racial differences are most pronounced among youngsters who display the *fewest* number of transgressions. These findings suggest that even nonwhite mothers whose children are, for the most part, well behaved at school need to worry that their son or daughter will be punished harshly for seemingly ordinary or infrequent problem behaviors.

Based on the likelihood that nonwhite mothers experience significantly higher levels of stress as a direct result of their children's exposure to unfair treatment, we hypothesize the following:

H2: Racial disparities in health among mothers at midlife can be explained, at least in part, by their adolescent and young adult children's experiences of discrimination.

Racial Differences in the Effects of Children's Discrimination on Maternal Wellbeing

Although individuals of all racial backgrounds experience instances of unfair treatment, we expect that the intergenerational health impacts of discrimination will be more pronounced for African American and Hispanic mothers compared to their White counterparts. This hypothesis suggests that racial disparities in health among mothers are not simply the result of *more frequent* experiences of unfair treatment among their children, but instead stem from a

differential intergenerational effect of discrimination that varies across race. Below, we will delineate the reasoning behind this hypothesized association.

First, racial inequality is entrenched within the very structure of American society, exposing African American and Hispanic women to an accumulated a lifetime of unfair treatment. These negative experiences have been shown to erode their mental and physical functioning exponentially over time, thus hastening the pace at which they age, or "weather" (Geronimus et al. 2015). Because of this accelerated biological aging process, the health of nonwhite mothers is already disadvantaged relative to their White counterparts by midlife. Furthermore, it is during this lifecourse period (i.e. midlife), when the pace of weathering is increasing exponentially (Geronimus et al. 2006), that their children are moving into adolescence and early adulthood, establishing more independence, and engaging in the riskiest behaviors. Simply put, due to lifetime of discrimination, the health of African American and Latina women erodes over time at a faster rate compared to White women. By the time their own children experience unfair treatment, (1) their initial health status has already been compromised and (2) their ability to withstand and recover from additional race-related stressors, even those encountered by other family members, is less robust.

Second, compared to Whites, nonWhites are more likely to anticipate experiences of unfair treatment, particularly in certain settings (i.e. school) or when interacting with specific types of people (i.e. law enforcement) even when these instances do not take place (Feagin & Sikes 1994). Anticipatory stress is just as problematic – sometimes even more so – than actual stress exposures in eroding health outcomes since the very same biochemical and physiological changes are triggered by the body's response to either type of experience (McEwen & Gianaros 2011; Sapolsky 2004). Furthermore, constantly being prepared to encounter experiences of

discrimination t leads nonwhite men and women to maintain a steady state of race-related hypervigilance, which has been linked to suboptimal health outcomes such as worse cardiovascular reactivity, hypertension risk, obesity, depression, and poor sleep (Clark et al. 2006; Hicken et al. 2013, 2014, 2018; Himmelstein et al. 2015; Sawyer et al. 2012). We suspect that anticipatory stress, in particular, plays an important role in explaining why the health of nonwhite mothers is likely to be more harmed by their children's experiences with unfair treatment compared to White mothers. African American and Latina women, based on their own experiences with discrimination as well as the historical legacies of racial inequality in the U.S., are more likely to anticipate that their children will be treated unfairly specifically because of their race.

Third, because of the underlying common structures and processes that uphold different types of social inequality (e.g. race, SES, or gender), individuals who occupy one disadvantaged social status are more likely to occupy others. For example, African Americans and Latinos experience higher poverty rates and lower educational attainment, on average, than Whites (Everett et al. 2011; Lichter et al. 2012; McDaniel et al. 2011; Sharkey 2013). This especially true for African American or Hispanic mothers who already are facing the "double burden" of being both women and nonwhite (St Jean and Feagin 2015). We are not suggesting an adherence to a simple hierarchy of oppression framework to predict the pace at which the health of mothers is likely to erode over time. Rather, we believe the health effects of occupying more than one disadvantaged social status are multiplicative and dynamic - as opposed to simply additive – and deserve to be viewed via a conceptual lens capable of capturing this level of complexity (Schwartz & Meyer 2010). Given these considerations, we test a third and final research hypothesis:

H3: The association between adolescent and young adult children's experiences of discrimination and mother's health at midlife will be significantly more pronounced for nonwhite vs. white respondents.

DATA AND METHODS

Description of the Data

We combine data from two National Longitudinal Survey (NLS) cohorts — the NLSY79 and the NLSY79-YA — to examine the extent to which instances of discrimination among children are associated with suboptimal health outcomes for their mothers. The NLSY79 contains information on a nationally representative sample of individuals who were between the ages of 14 and 22 in 1979 and have been reinterviewed either annually or biannually through 2014. In 1986, interviewers began to collect data on all children born to NLSY79 mothers. It is this group of respondents who form the basis for the NLSY79 young adult survey. By 2015, the NLSY79 and the NLSY79 young adults were comprised of 7,071 and 5,735 individuals, respectively, who were, on average, 53 and 26 years old. Thus, the NLSY79 represents members of the baby boom cohort, while the NLSY79-YA captures the experience of their millennial children.

NLSY79 study has a number of health indicators that make it one of the best data sources to study changes in mental and physical functioning over time – both within and across generations. Moreover, in the mid 2000s, two comprehensive health assessments, each of which was conducted when respondents were 40 and 50 years old, respectively, were added to the NLSY79. Thus, we now have a rich picture of how the health and wellbeing of members of this baby boomer cohort has fluctuated over a period of 35 years. In 2012, questions about experiences of unfair treatment were added to the NLSY79-YA survey. These were based, in

large part, on measures of interpersonal discrimination originally developed by David Williams, whose psychometric properties have been well established and which have been subsequently used and validated across a diverse set of study samples (Bastos et al. 2010; Krieger et al. 2005)

Description of the Measures

Self-rated health. To capture changes in mother's health across midlife we rely on a commonly used indicator of overall wellbeing – self-rated health. As part of extensive health assessments that were conducted when the original NLSY79 cohort was 40 and 50 years of age, respectively, respondents were asked, "In general, would you say your health is…excellent, very good, good, fair, or poor?" Despite being based on a simple survey question and relying on respondent self-report, this measure has been consistently shown to be a reliable indicator of subsequent morbidity and mortality, often predicting these outcomes more accurately than physician examination (DeSalvo et al. 2006; Jylha 2009). Moreover, because this question is easily understood by participants from a wide range of socioeconomic backgrounds and does not dramatically increase the time and effort required to complete the interview, the proportion of missing data on this type of health measure remains low compared to other commonly used indicators of health and wellbeing, particularly those that are assessed by a trained interviewer or healthcare professional during a physical examination. Finally, self-rated health is one of the few health measures that were assessed in both the 40th and 50th health module, thus allowing us to assess declines in health across midlife rather than simply predicting health at a single point in time.

Interpersonal discrimination. We discern experiences of discrimination among NLSY79 young adults using two multi-item measures – one that captures acute instances of unfair

treatment and one that captures more chronic ones. The Major Experiences of Discrimination Scale (MEDS) is comprised of a series of five survey questions that asks respondents if they have ever encountered acute discrimination in a number of different settings (e.g. at school, at work, or during interactions with police). An example of MEDS question wording is as follows: "Have you ever been unfairly discouraged by a teacher or advisor from continuing your education?" The Everyday Discrimination Scale (EDS), on the other hand, includes 12 questions that assess the frequency with which respondents are exposed to more chronic forms of discrimination. Items in the EDS adhere to the following wording, "In your day-to-day life, how often have any of the following happened to you?" Examples of subsequent statements are (1) "How often have you received poor service than other people at restaurants or stores?" (2) "How often have people acted as if they think you are not smart?" (3) "How often have you been called names or insulted?" NLSY79 young adults can describe the frequency of these occurrences as either very often, fairly often, not too often, hardly ever, or never. Similar to a preponderance of the extant research, we analyze acute (MEDS) and chronic (EDS) discrimination separately since previous studies have found these two types of unfair treatment to have differential effects on health (Lewis et al. 2015; Williams et al. 2003). A complete description of the individual items that comprise the MEDS and the EDS is presented in Appendix A.

Race. To determine the racial/ethnic background of the NLSY79 respondent, we rely on an indicator of mother's race that is based on the interviewer's initial assessment at the beginning of data collection efforts in 1979. Subsequent analyses reveal a high correlation between interviewer's and respondent's racial identification in the NLSY79 (Light & Nandi 2007). Based on this classification scheme, we divide the sample into three mutually exclusive racial categories - nonHispanic Whites, nonHispanic Blacks, and Hispanics. We were unable to include

other racial/ethnic groups in our analyses due to small cell sizes; thus, respondents who racial identification fell outside these three categories were excluded from the final analytic sample.

Other sociodemographic variables. We also consider key sociodemographic control variables that could potentially confound the association between a child's experiences of unfair treatment and his/her mother's general health status. Since our aim was to identify possible covariates that might be associated both with a child's exposure to discrimination and his/her mother's health rather than capturing potential mediating mechanisms, all covariates were measured during the survey year in which the NLSY79 mother completed her 40th health assessment. These sociodemographic controls are as follows: marital status (currently married, never married, or previously married), region of residence (Northeast, Midwest, South, or West), employment status (employed, unemployed, out of the labor force), and years of completed schooling.

Analytic Strategy

Since the outcome measure, self-rated health, contains five possible outcomes, we estimate a series of ordered logistic regression models, which rely on maximum likelihood estimation, to determine the extent to which an adolescent or young adult child's exposure to discrimination negatively impacts his/her mother's health at age 50. Since we are interested in capturing the decline in health during midlife, rather than at a single point in time, we include self-rated health at age 40 as a control variable in all regression analyses. Ordered logit models assume that the odds of moving from one response category to the next remain consistent across the range of outcomes. Subsequent sensitivity tests revealed that our results are robust to different specifications of the outcome variable, namely whether self-rated health is captured

using all five response categories or collapsed into a dichotomous measure (fair/poor health vs. all others). We calculate robust standard errors using the Huber White correction method to account for heteroskedastic distributions in the error terms and cluster at the highest level of aggregation, which in this case is the original NLSY79 family. The regression equation can be written as follows:

$$\text{Ln}\left(\frac{p_{ij}}{1-p_{ij}}\right) = \beta_{0ij} + \beta_{1ij} + \mathbf{X}_{ij} + e_{ij}$$

whereby for each individual *i* from family *j*, *p* is the probability of being in fair or poor health, β_0 denotes the value of the intercept, β_1 represents the regression coefficient for acute or chronic discrimination, **X** indicates a matrix of sociodemographic controls, and *e* captures the error term.

To deal with issues of missing data, we rely on multiple imputation methods with chained equations. This iterative approach allows us to estimate a range of values for missing responses based on the distribution observed in the existing data. Chained equations do not assume a joint multivariate normal distribution among variables with missing data, thus allowing us to separately consider conditional distributions for each variable entered into the imputations. Once we restrict our analytic sample to include only those respondents for whom we have nonmissing values on the dependent and independent variables of interest (i.e. self-rated health, acute or chronic discrimination, and mother's race), we use a diverse set of predictors to estimate five sets of responses for each missing value. These imputed values include a random component based on draws from the posterior predictive distribution of the missing data under a posited Bayesian model which, under the missing-at-random assumption, provide unbiased estimates of variance (Allison 2001). Following von Hippel (2013), we include variables in our imputations that are consistent with and have the same functional form as those entered in our final regression models. None of the covariates for which values were imputed exceeded 2% missing.

Out of the 3,256 NLSY79 mothers who completed both the 40th and 50th health modules, 3,005 had children who provided answers to either the acute or chronic discrimination questions. This subgroup forms the basis of our analytic sample since there were no missing values on race of the NLSY79 respondent and values for all additional covariates were imputed.

RESULTS

Descriptive Results

Descriptive findings for the full sample and stratified by race are presented in Table 1. As a whole, NLSY79 mothers tend to be healthy upon reaching midlife. At age 40, more than 54% of respondents rate their health as being excellent or very good, while more than 15% describe their health as fair or poor. By age 50, however, the health of NLSY79 mothers began to decline, with only 46% of respondents saying their health is excellent or very good and almost 24% describing their health as fair or poor. Moreover, racial disparities in self-rated health are clearly apparent. By age 50, only 17% of nonHispanic Whites could be classified as having fair or poor health. This stands in contrast to 31% and 26% of nonHispanic Blacks and Hispanics, respectively, who rated their health as fair or poor. These differences in self-rated health across race are consistent with other nationally representative estimates (NCHS 2017).

Regarding exposure to unfair treatment among the NLSY79 young adults, we find notable dissimilarities across race. For acute discrimination, nonHispanic Whites and nonHispanic Blacks report the lowest and highest levels, respectively, while Hispanics fall somewhere between the two. For example, 11% of nonHispanic Whites, 22% of nonHispanic Blacks, and 15% of Hispanics, report acute discrimination frequently enough to place them within the highest response category. The opposite pattern is discernable when examining the

least frequent experiences of acute discrimination, with 69% of nonHispanic Whites, 51% of nonHispanic Blacks, and 63% of Hispanics falling into the lowest response category. Mean chronic discrimination scores by race follow a slightly different pattern with nonHispanic Whites and Hispanics having almost identical values (8.08 and 8.04), while average chronic discrimination scores among nonHispanic Blacks are almost 2-points higher (9.81).

Turning now to additional sociodemographic characteristics of the analytic sample, we find that by age 40, 61% of NLSY79 mothers were currently married, with an additional 27% and 11% characterizing themselves as previously married or never married. Racial disparities in marital status are striking with African Americans experiencing the lowest rates of marriage by far. Only 39% of nonHispanic Blacks were married, compared to 78% of nonHispanic Whites and 62% of Hispanics. At age 40, almost three-quarters of our sample (73%) were employed while almost one-quarter (23%) was out of the labor force. Compared to other racial groups, nonHispanic Whites had the highest rates of employment at 75%, followed by nonHispanic Blacks (73%) and Hispanics (66%). The average number of years of completed schooling for NLSY79 mothers, as a whole, is 12.9 years; however, this value fluctuates significantly across race, with nonHispanic Whites accumulating the most education (13.5 years), Hispanics accumulating the least (11.9 years), and nonHispanic Blacks falling somewhere in between (12.8 years).

Regression Results

Results from a series of regression analyses are presented in Table 2. Models 1 and 3 reveal the extent to which experiences of major (MEDS) and everyday (EDS) discrimination, respectively, among adolescent and young adult children are associated with changes in their mother's self-

rated health between 40 and 50 years of age, net of the effect of race. In Models 2 (MEDS) and 4 (EDS), we control for additional covariates that could confound the relationship of interest including mother's marital status, region of residence, employment status, and years of completed education.

Model 1 reveals a significant and graded association between children's exposure to unfair treatment and declines in their mother's health between age 40 and 50. Compared to mothers of children reporting low levels of acute discrimination, mothers of children reporting moderate or high levels faced a 14% or 25% reduction in the odds of being in better health at age 50, respectively (Model 1). After controlling for a number of key covariates (Model 2), these discrepant risks remained pronounced, with the health of mothers of children exposed to moderate or high, as opposed to low, levels of acute discrimination declined by 12% and 22%, respectively.

Results from Models 3 and 4 in Table 2 reveal a similar patterning in the association between children's chronic discrimination and declines in their mother's health at midlife. Model 3 illustrates that, controlling for race and health at age 40, a one standard deviation increase in chronic discrimination among adolescent and young adult children results in mothers' odds of good health decreasing by more than 10% by the age of 50. Additionally, after controlling for additional control variables, this relationship remains practically unchanged with the magnitude of the regression coefficient falling from -0.110 to -0.102 (Model 4). Taken together, findings from Table 2 suggests that experiences of unfair treatment among adolescent and young adult children are likely to negatively impact their mother's health during midlife; moreover, this association does not appear to be largely driven by other key sociodemographic characteristics that are known to influence both exposure to discrimination and overall health status.

H2: Racial disparities in health among mothers at midlife can be explained, at least in part, by their adolescent and young adult children's experiences of discrimination.

Results from regression analyses designed to examine the extent to which unfair treatment among children contributes to racial disparities in health are shown in Table 3. Again, we are modeling the change in the health of NLSY79 mothers between the ages of 40 and 50 years. Unlike findings presented in Table 2, all four regression models in Table 3 control for potential confounders. Model 1 clearly illustrates that Black/White differences in self-rated health are pronounced by midlife. Compared to nonHispanic White NLSY79 mothers, nonHispanic Black NLSY79 mothers face a 29% reduction in the odds of being in good health between 40 and 50 years of age. Hispanic mothers also experience greater health declines during their 40s than nonHispanic White mothers, but this racial discrepancy is much smaller in magnitude (-0.086 or 8%) and fails to reach statistical significance ($p < 0.05$). Children's experiences of acute discrimination appear to explain some, but not nearly all, of the Black/White or Hispanic/White gap in mother's health at midlife (Model 2). Once we control for instances of acute unfair treatment among children, the coefficient for nonHispanic Black mothers decreases by 9% from -0.344 to -0.313 but remains sizeable and highly significant ($p < 0.01$).

Models 3 and 4 of Table 3 present findings from an identical set of regression analyses designed to estimate the extent to which children's exposure to chronic, as opposed to acute, discrimination negatively influences their mother's health at midlife. As a reminder, sample sizes are different in the last two models of Table 3 compared to the first two because questions regarding instances of acute unfair treatment were only asked of NLSY79 young adults 21 years

and older, while instances of chronic unfair treatment were asked of NLSY79 young adults aged 18 years or more. Despite slight differences in sample sizes and age ranges, results from Model 3 mirror those presented in Model 1 and reveal stark racial disparities in self-rated health among women at midlife, particularly African Americans. Compared to nonHispanic White mothers, nonHispanic Black and Hispanic mothers can expect their chances of being in good health to decline by 29% and 10%, respectively, between 40 and 50 years of age. Similar to findings from Model 1, the Hispanic/White gap in self-rated health does not reach statistical significance ($p < 0.05$). Once we take into account exposure to chronic discrimination, the regression coefficient for nonHispanic Blacks decreases by 7% from -0.344 to -0.320, while the coefficient for Hispanics *increases* slightly by 9% from -0.107 to -0.117. In sum, it appears that exposure to discrimination among adolescent and young adult children explains a modest amount of racial disparities in health among their mothers at midlife, particularly among African Americans.

H3: The association between adolescent and young adult children's experiences of discrimination and mother's health at midlife will be significantly more pronounced for nonwhite vs. white respondents?

Results concerning the third and final study hypothesis are presented in Tables 4a (for acute discrimination) and 4b (for chronic discrimination). We sought to determine whether the association between children's unfair treatment and their mother's health at midlife significantly differed by race. We include interaction terms, race*discrimination, to capture these more nuanced relationships and find very limited evidence that the health of Black and/or Hispanic mothers is more harmed by their children's experiences of unfair treatment than the health of White mothers. The only interaction term in Tables 4a or 4b that approaches statistical

significance ($p < 0.05$) corresponds to the NH Black*High regression coefficient (Model 2, Table 4a). This finding indicates that the health of African Americans mothers declines *less* rapidly between the ages of 40 and 50 years than the health of their White counterparts when their children frequently encounter acute forms of unfair treatment. NonHispanic White mothers whose children experience high levels of acute discrimination face a 35% decrease in the odds of being in good health during their 40s, while NonHispanic Black mothers whose children experience similar levels of acute discrimination only face an 8% decrease in the odds of being in good health. Although this suggests a differential effect of child's discrimination on mother's health for Black women, it is in the opposite direction we originally hypothesized. We find no evidence of significant interactions based on race for chronic discrimination (Table 4b).

DISCUSSION

Discrimination is harmful for health, particularly among marginalized populations (Lewis et al. 2015). Furthermore, prior research shows mothers who experience more instances of unfair treatment tend to have less healthy children (Rosenthal & Lobel 2011). Combining stress and life course theory, we test whether the intergenerational transmission of unfair treatment flows in the other direction — from child to mother—by examining how adolescent and young adult children's experiences of discrimination matter for mother's self-rated health in midlife. This study advances our understanding of the intergenerational transmission of both discrimination and health, and helps to explain (1) how disadvantage is reproduced from one generation to the next with remarkable consistency and (2) the importance of midlife as a critical lifecourse period during which racial disparities in health among women emerge.

Regarding the first hypothesis, our results suggest that children's exposure to discrimination—both acute and chronic— during adolescence and young adulthood, is associated with significant declines in their mothers' health at midlife. To our knowledge, this is the first study to demonstrate that experiences of unfair treatment can have intergenerational negative health effects that operate from child to mother as opposed to from mother to child. These findings lend credence to the idea that discrimination is likely to erode health outcomes across a wide range of family ties and other critical social network connections, rather than only impacting individuals who directly experience the unfair treatment. Thus, it might be beneficial for health researchers to expand their conceptualization of interpersonal discrimination to reflect its effects on both individual and aggregate outcomes, such as those operating at the family, friendship network, or community level. Such a rethinking of how unfair treatment works to erode population health also suggests we should avoid simple theoretical dichotomies, which treat interpersonal and structural discrimination as two distinct phenomena through which disadvantage is transmitted via isolated pathways that never intersect.

Our second hypothesis considered if more frequent exposure to discrimination among adolescent and young adult children accounts, at least in part, racial disparities in health among mothers at midlife. We find modest evidence to support this claim, but only for African Americans. By adjusting for children's experiences of unfair treatment, we were able to explain almost 10% of the decline in self-rated health from age 40 to age 50 among nonHispanic Black NLSY79 mothers. Since health, particularly that which is captured by an indicator as general as self-rated health, is a remarkably multi-faceted construct with many contributing factors and that the time interval between age 40 and 50 years is relatively short in duration, we consider this finding to be notable and argue that it should not be dismissed but investigated further in future

research. Moreover, given what we know about "weathering" among African Americans – particularly that the pace of health erosion accelerates quickly during midlife (Geronimus et al. 2015), this finding might be a harbinger of widening racial inequalities in wellbeing that would have been detected if we could have followed NLSY79 mothers for longer periods of time. We leave it to subsequent studies to investigate this possibility further.

The third and final empirical objective of the current study was to determine if the negative impacts of children's unfair treatment on their mother's health at midlife significantly differed across race. We hypothesized that the health of African American and Hispanic mothers would decline at a faster rate than that of their White counterparts. Results presented here, however, do not support this supposition. Instead, we find that the health of Black mothers whose children experienced high levels of acute discrimination eroded at a slower pace than the health of White mothers whose children also experienced high levels of acute discrimination. These results are not without precedent in the literature, as reflected by studies that report disparate health effects of discrimination among Whites compared to nonWhites (Bratter & Gorman 2011; Pavalko et al. 2003; Williams et al. 1997).

Due primarily to data limitations, we were unable to further explore this somewhat counterintuitive finding, but we consider potential explanations here. First is the possibility that the more pronounced impact of children's discrimination on their mother's health among Whites compared to African Americans is largely attributable to selection pressures. It could be that the mothers of White adolescents and young adults who encounter frequent instances of unfair treatment are a particularly unique group of individuals whose social and economic circumstances, such as chronic poverty or downward social mobility, result in particularly rapid health deterioration across the lifecourse. A similar trend is noted by LaVeist and colleagues

(2011), who find that racial disparities in health are dramatically reduced or eliminated by comparing Black and White residents who live in an integrated neighborhood in Southeast Baltimore. Another possible explanation stems from substantive racial differences in the way that nonWhite and White individuals are prepared, via a lifetime of learning, to deal with experiences of discrimination – especially acute instances of unfair treatment that are captured by the MDS measure. Since discrimination is less common among Whites, these mothers might be surprised to find out that their children have been exposed to high levels of unfair treatment and have fewer coping skills to deal with feelings of parental helplessness and fear for their children's safety.

The finding that children's exposure to unfair treatment can negatively influence their mothers' health is consistent with what is currently known via stress theory about how discrimination gets "under the skin" and works to erode health and wellbeing over time, as well as the life course theories on the intergenerational transmission of well-being. First, given the primacy of anticipatory stress in activating the human stress response, the cascade of physiological changes that occur when an individual encounters a psychosocial stressor in his/her environment can be similarly triggered whether the initial stressor is actual or perceived (McEwen & Gianaros 2011; Sapolsky 2004). Thus, engaging in anticipatory thinking about the possibility that instances of unfair treatment might occur can turn what might typically be thought of as an acute stressor into a more chronic one. This is particularly important when considering how exposure to discrimination harms mental and physical functioning since prior research suggests that sustained experiences of unfair treatment are more health harmful than those occurring within a more circumscribed period of time (Lewis et al. 2015; Williams et al.

2003). Anticipatory stress also plays an important role in sustained hypervigilance, which recent research indicates might be particularly health harmful (Hicken et al. 2013, 2014, 2018).

Second, a small but growing body of literature suggests that instances of discrimination might be better understood as a population-level rather than an individual-level exposure (Chae et al. 2018; Lauderdale 2006; Novak et al. 2017; Orchard & Price 2017). In particular, findings from studies that use major historical events or abrupt policy changes to quantify the "spillover" effects of discriminatory attitudes, beliefs, or behaviors on health illustrate that the negative impacts of unfair treatment are not limited to only those who directly experience these race-related stressors. Instead, they can result in *population*-based increases in deleterious health outcomes among those who were not even born when the exposure occurred. For example, Lauderdale (2006) find evidence of increased risks of low birthweight and preterm birth among Arab American women living in *California* following the September 11th attacks, while Novak et al. (2017) report similar increases in low birthweight among both foreign and U.S. born Hispanic women in Iowa after the largest immigration raid in recent history, which took place in the town of Postville.

Limitations

Although the current study extends our understanding of the intergenerational health impacts of discrimination in critical ways, its findings should be interpreted in light of limitations. First and foremost, due to data availability, we could only examine the extent to which mothers' health at midlife changed from age 40 to 50 years. We were not able to extend the follow-up period for NLSY79 mothers past age 50 because (1) the oldest respondents were only 56 years in 2014 and (2) another health module has yet to be administered. This is not a

very long period of time to elapse between the initial and final health assessment. Moreover, this 10-year interval occurs at the very beginning of midlife rather than spanning the entirety of this lifecourse stage. These data limitations suggest that our findings are conservative estimates of the extent to which children's instances of unfair treatment are likely to influence their mother's health at midlife. Thus, our findings are likely to be conservative estimates of the intergenerational impacts of children's experiences of discrimination on their mother's health during midlife. It remains to be seen if our findings will remain consistent, become more pronounced, or dissipate as NLSY79 mothers continue to age.

The relatively short length of the follow-up period in the current study could also help explain why we did not discern a greater propensity of children's discrimination to account for racial disparities in health, particularly among African Americans who report higher rates of both acute and chronic unfair treatment than most other racial/ethnic groups (Lewis et al. 2015). It remains to be seen if the modest role that the intergenerational health effects of discrimination appears to play on women's health continues as this cohort of mothers moves through midlife and onto older ages.

The second limitation to consider when stems from our reliance on self-rated health as an outcome measure. The decision to use this indicator to capture racial disparities in wellbeing was made deliberately and carefully, with a number of considerations in mind. Self-rated health is particularly useful when trying to capture racial differences in wellbeing that are just beginning to emerge and whose symptoms might still be subclinical. It is these types of initial disease states that we would expect to be the most pronounced at the beginning of midlife. Furthermore, compared to other, more specific physical health outcomes, such as hypertension or diabetes, self-rated health is not dependent on physician diagnosis and thus not differentially impacted by

racial disparities in healthcare access. We hope that future studies will investigate the consistency of our results using use biomarker data, such as cortisol levels or telomere length, to capture health deterioration in one's 40s and 50s.

Conclusion

Despite recent gains in medical knowledge, clinical treatment, and access to care, racial disparities in health remain a persistent roadblock to widespread improvements in population health. It is critical that we gain a deeper understanding of the processes by which African Americans and Hispanics can expect to die earlier and live less healthy lives. Based on the findings from a robust and varied literature and stress and life course theories, exposure to discrimination plays a predominant role in producing and maintaining racial disparities in health. This paper moves beyond past research to show how experiences of unfair treatment can negatively influence health outcomes not only within a single generation but across generations as well.

Our results provide evidence that the negative health effects of discrimination are intergenerational and bidirectional in nature, at least when considering health outcomes of mothers in midlife. Furthermore, higher rates of acute and chronic unfair treatment help to explain, at least in part, why the health of African American women declines at a faster rate than their White counterparts. These findings, in conjunction with those from a growing body of literature concerning maternal experiences of unfair treatment and their impact on infant health, lend credence to the idea that discrimination should be viewed as a social exposure rather than a purely individual one. Efforts to reduce exposure to unfair treatment are likely be underestimated and undervalued as a mechanism through which racial disparities in health can be eliminated

since, as a society, we rarely ask to what extent to these deleterious experiences harm those who do not directly encounter the discrimination itself.

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Table 1. Descriptives Statistics for NLSY79 Mothers and Their Young Adult Children

	Full Sample	NH Whites	NH Blacks	*p*	Hispanics	*p*
Health at Age 50						
Excellent	13.09	16.31	8.68	***	13.22	***
Very good	32.44	38.80	28.41		25.52	
Good	30.92	27.79	32.30		35.24	
Fair	17.51	12.47	23.02		19.44	
Poor	6.03	4.62	7.58		6.57	
Health at Age 40						
Excellent	19.49	24.02	15.44	***	16.36	***
Very good	34.59	39.28	31.52		29.65	
Good	30.43	26.57	32.39		35.38	
Fair	12.57	7.20	18.14		15.10	
Poor	2.91	2.92	2.51		3.50	
Acute Discrimination [a]						
High	15.36	10.52	21.83	***	14.49	***
Moderate	23.48	20.59	27.63		22.51	
Low	61.15	68.89	50.53		63.00	
Chronic Discrimination	8.65	8.08	9.81	***	8.04	
	(6.31)	(5.77)	(6.95)		(6.13)	
Race/Ethnicity						
NH White	44.85					
NH Black	33.36					
Hispanic	21.79					
Marital Status						
Married	61.52	77.61	39.47	Ref	62.17	Ref
Never married	11.23	2.24	25.99	***	7.13	***
Previously married	27.25	20.15	34.54	***	30.70	***
Region of Residence						
Northeast	14.25	15.90	11.97	Ref	14.35	Ref
Midwest	25.75	36.89	21.12	+	9.89	***
South	40.12	30.91	60.16	***	28.41	
West	19.88	16.30	6.75	**	47.36	***
Employment Status						
Employed	72.54	75.28	72.81	Ref	66.46	Ref
Unemployed	4.23	2.51	5.71	**	5.48	**
Out of labor force	23.24	22.20	21.48		28.06	**
Years of Education	12.91	13.54	12.75	***	11.87	***
	(2.46)	(2.35)	(1.97)		(2.90)	
N (Children)	6,562	2,943	2,189		1,430	
N (Mothers)	3,004	1,448	958		598	

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; +$p < 0.10$

[a] Sample size for acute discrimination measure is as follows: 5,604 (combined), 2,404 (NH White), 1,965 (NH Black), and 1,235

Table 2. Ordered Logit Regression Results Predicting Self-Rated Health at Age 50 among NLSY79 Mothers

	Acute Discrimination						Chronic Discrimination					
	Model 1			Model 2			Model 3			Model 4		
	b		SE[b]	*b*		SE[b]	*b*		SE[b]	*b*		SE[b]
Race/Ethnicity												
NH White	Ref			Ref			Ref			Ref		
NH Black	-0.416	***	0.091	-0.313	**	0.100	-0.444	***	0.089	-0.320	**	0.098
Hispanic	-0.203	+	0.108	-0.084		0.117	-0.254	*	0.103	-0.117		0.111
Acute Discrimination												
Low	Ref			Ref								
Moderate	-0.150	*	0.063	-0.132	*	0.063						
High	-0.287	***	0.074	-0.251	**	0.075						
Chronic Discrimination[a]							-0.110	***	0.024	-0.102	***	0.024
Health at Age 40	1.067	***	0.050	0.997	***	0.051	1.072	***	0.048	0.998	***	0.049
Marital Status												
Currently married				Ref						Ref		
Never married				-0.246	+	0.146				-0.242	+	0.144
Previously married				-0.221	*	0.092				-0.245	**	0.091
Region of Residence												
North				Ref						Ref		
Midwest				-0.168		0.125				-0.204	+	0.121
South				-0.058		0.117				-0.091		0.113
West				0.022		0.149				0.002		0.141
Employment Status												
Employed				Ref						Ref		
Unemployed				-0.285		0.253				-0.271		0.241
Out of labor force				-0.245	*	0.104				-0.257	**	0.098
Years of Education				0.100	***	0.020				0.100	***	0.018
N (Children)	5,604			5,604			6,562			6,562		
N (Mothers)	2,771			2,771			3,004			3,004		

***p < 0.001; **p < 0.01; * p < 0.05; + p < 0.10

Note: All regression models control for covariates measured at age 40. These are self-rated health, marital status, region, employment, and completed schooling.

[a] The chronic discrimination measure is standardized and presented in standard deviation units.

[b] All robust standard errors were calculated using the Huber White correction method and clustered at the level of the NLSY79 family.

Table 3. Ordered Logit Regression Results Predicting Racial Disparities in Self-Rated Health at Age 50 among NLSY79 Mothers

	Acute Discrimination						Chronic Discrimination					
	Model 1			Model 2			Model 3			Model 4		
	b		SE[b]	*b*		SE[b]	*b*		SE[b]	*b*		SE[b]
Race/Ethnicity												
NH White	Ref			Ref			Ref			Ref		
NH Black	-0.344	**	0.100	-0.313	**	0.100	-0.344	***	0.098	-0.320	**	0.098
Hispanic	-0.086		0.117	-0.084		0.117	-0.107		0.111	-0.117		0.111
Acute Discrimination												
Low				Ref								
Moderate				-0.132	*	0.063						
High				-0.251	**	0.075						
Chronic Discrimination[a]										-0.102	***	0.024
Health at Age 40	0.998	***	0.050	0.997	***	0.051	1.002	***	0.049	0.998	***	0.049
Marital Status												
Currently married	Ref			Ref			Ref			Ref		
Never married	-0.254	+	0.146	-0.246	+	0.146	-0.249	+	0.145	-0.242	+	0.144
Previously married	-0.238	**	0.091	-0.221	*	0.092	-0.258	**	0.090	-0.245	**	0.091
Region of Residence												
North	Ref			Ref			Ref			Ref		
Midwest	-0.161		0.125	-0.168		0.125	-0.203	+	0.121	-0.204	+	0.121
South	-0.051		0.117	-0.058		0.117	-0.082		0.112	-0.091		0.113
West	0.017		0.148	0.022		0.149	-0.008		0.141	0.002		0.141
Employment Status												
Employed	Ref			Ref			Ref			Ref		
Unemployed	-0.295		0.252	-0.285		0.253	-0.276		0.241	-0.271		0.241
Out of labor force	-0.247	*	0.104	-0.245	*	0.104	-0.251	*	0.098	-0.257	**	0.098
Years of Education	0.101	***	0.020	0.100	***	0.020	0.101	***	0.018	0.100	***	0.018
N (Children)	5,604			5,604			6,562			6,562		
N (Mothers)	2,771			2,771			3,004			3,004		

***p < 0.001; **p < 0.01; * p < 0.05; + p < 0.10

Note: All regression models control for covariates measured at age 40. These are self-rated health, marital status, region, employment, and completed schooling.

[a] The chronic discrimination measure is standardized and presented in standard deviation units.

[b] All robust standard errors were calculated using the Huber White correction method and clustered at the level of the NLSY79 family.

Table 4a. Ordered Logit Regression Results Predicting Self-Rated Health at Age 50 among NLSY79 Mothers with Interactions (Race*Acute Discrimination)

	Model 1			Model 2		
	b		SE[b]	*b*		SE[b]
Race/Ethnicity						
NH White	Ref			Ref		
NH Black	-0.313	**	0.100	-0.404	***	0.110
Hispanic	-0.084		0.117	-0.084		0.125
Acute Discrimination						
Low	Ref			Ref		
Moderate	-0.132	*	0.063	-0.153	+	0.091
High	-0.251	**	0.075	-0.437	***	0.121
*Race*Discrimination Interactions*						
NH Black × Moderate				0.118		0.140
NH Black × High				0.357	*	0.166
Hispanic × Moderate				-0.085		0.176
Hispanic × High				0.138		0.212
Self-Rated Health at Age 40	0.997	***	0.051	0.997	***	0.051
Marital Status						
Currently married	Ref			Ref		
Never married	-0.246	+	0.146	-0.246	+	0.146
Previously married	-0.221	*	0.092	-0.218	*	0.092
Region of Residence						
North	Ref			Ref		
Midwest	-0.168		0.125	-0.173		0.125
South	-0.058		0.117	-0.055		0.117
West	0.022		0.149	0.026		0.149
Employment Status						
Employed	Ref			Ref		
Unemployed	-0.285		0.253	-0.282		0.254
Out of labor force	-0.245	*	0.104	-0.246	*	0.104
Years of Education	0.100	***	0.020	0.099	***	0.020
N (Children)	5,604			5,604		
N (Mothers)	2,771			2,771		

***p < 0.001; **p < 0.01; * p < 0.05; + p < 0.10

Note: All regression models control for covariates measured at age 40. These are self-rated health, marital status, region, employment, and completed schooling.

[a] The chronic discrimination measure is standardized and presented in standard deviation units.

[b] All robust standard errors were calculated using the Huber White correction method and clustered at the level of the NLSY79 family.

Table 4b. Ordered Logit Regression Results Predicting Self-Rated Health at Age 50 among NLSY79 Mothers with Interactions (Race*Chronic Discrimination)

	Model 1			Model 2		
	b		SE[b]	*b*		SE[b]
Race/Ethnicity						
NH White	Ref			Ref		
NH Black	-0.320	**	0.098	-0.324	**	0.098
Hispanic	-0.117		0.111	-0.121		0.111
Chronic Discrimination	-0.102	***	0.024	-0.104	**	0.038
*Race*Discrimination Interactions*						
NH Black × Chronic Discrim				0.023		0.054
Hispanic × Chronic Discrim				-0.039		0.067
Self-Rated Health at Age 40	0.998	***	0.049	0.998	***	0.049
Marital Status						
Currently married	Ref			Ref		
Never married	-0.242	+	0.144	-0.242	+	0.144
Previously married	-0.245	**	0.091	-0.243	**	0.091
Region of Residence						
North	Ref			Ref		
Midwest	-0.204	+	0.121	-0.204	+	0.121
South	-0.091		0.113	-0.089		0.113
West	0.002		0.141	0.004		0.141
Employment Status						
Employed	Ref			Ref		
Unemployed	-0.271		0.241	-0.270		0.241
Out of labor force	-0.257	**	0.098	-0.258	**	0.098
Years of Education	0.100	***	0.018	0.100	***	0.018
N (Children)	6,562			6,562		
N (Mothers)	3,004			3,004		

***p < 0.001; **p < 0.01; * p < 0.05; + p < 0.10

Note: All regression models control for covariates measured at age 40. These are self-rated health, marital status, region, employment, and completed schooling.

[a] The chronic discrimination measure is standardized and presented in standard deviation units.

[b] All robust standard errors were calculated using the Huber White correction method and clustered at the level of the NLSY79 family.

Appendix A. Description of Major Experiences and Everyday Discrimination Scale Used in the NLSY79-YA Survey

Description of Discrimination Measures	Response Categories
Major Experiences of Discrimination Scale (MEDS)	
In the following questions, we are interested in the way other people have treated you or your beliefs about how other people have treated you. Can you tell me if any of the following has ever happened to you:	
1. Have you ever been unfairly discouraged by a teacher or advisor from continuing your education?	Yes/No
2. Have you ever not been hired for a job?	
3. Have you ever been unfairly denied a promotion?	
4. Have you ever been unfairly fired?	
5. Have you ever been unfairly stopped, searched, questioned, physically threatened, or abused by the police?	
Everyday Discrimination Scale (EDS)	
In your day-to-day life, how often have any of the following happened to you?	
1. How often have you been treated with less courtesy than other people?	Very often
2. How often have you been treated with less respect than other people?	Fairly often
3. How often have you received poorer service than other people at restaurants or stores?	Not too often Hardly Ever
4. How often have people acted as if they think you are not smart?	Never
5. How often have people acted as if they are afraid of you?	
6. How often have people acted as if they think you are dishonest?	
7. How often have people acted as if they are better than you?	
8. How often have you been called names or insulted?	
9. How often have you been threatened or harassed?	