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Race, Racial Discrimination, and the Risk of Work-Related Illness, Injury or Assault: Findings from a National Study

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Abstract

Objective: This study examines whether workplace racial harassment/discrimination mediates the relationship between race/ethnicity and work-related illness, injury or assault across time.

Methods: A national random-digit dial phone survey was conducted at two points in time (W1: 2003-2004; W2: 2004-2005) among a sample of Black, Hispanic and non-Hispanic white workers. As part of the survey, respondents indicated their experiences with racial harassment or discrimination, and occupational illness, injury, or assault in the past 12 months.

Results: Hispanic respondents were more likely than whites to experience work-related illness, injury or assault, and these associations were mediated by experiences of racial harassment/discrimination.

Conclusions: Interventions to reduce workplace harassment and discrimination may help decrease risk for work-related illness, injury, or assault among Hispanic workers.

Introduction

Racial and ethnic inequalities in health and mortality have been well documented in the U.S. across a range of health outcomes. Studies show that racial/ethnic minorities have disproportionately higher rates of disease,¹⁻³ death,⁴⁻⁶ and disability^{7, 8} than their white counterparts. Hispanic workers, particularly recent immigrants, are at particularly high risk of occupational illness and injury.^{9, 10} Racial/ ethnic minorities also have disproportionately higher rates of fatal occupational injuries^{11, 12} and death due to occupational disease¹³⁻¹⁶ than Whites. Classic case studies are particularly illustrative of the disproportionate risk minorities often face in the workplace. The Gauley Bridge incident in West Virginia was the site of the worst occupational disaster in United States history. While Black workers represented less than 20% of the local population, 76% of the estimated 700 workers who died as a direct result of the dry-drilling techniques used to cut through mountains were Black.^{14, 15} Similarly, Lloyd's epidemiological study of US steel workers found that Black workers were more likely than Whites to work in the coke oven departments where the exposure to carcinogens was the highest.¹⁶

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Clinical Significance

Race, Racial Discrimination, and the Risk of Work-Related Illness, Injury or Assault: Findings from a National Study
Statement of Clinical Significance

This study suggests that Hispanic workers are at risk for occupational illness/ injury/ assault due to racial discrimination in the workplace. Healthcare providers would benefit from being aware of this risk when working with Hispanic individuals.

Less attention has focused on racial/ethnic variations in non-fatal work-related illness or injury, despite the fact that racial/ethnic inequalities in non-fatal work-related illness or injury represent an important public health concern, and existing findings are mixed. Some studies show that minorities are at a higher risk than whites for work-related illness or injury.¹⁷⁻¹⁹ Other studies do not support these findings.^{9, 20-22} These inconsistencies are likely due to differences in model specifications and samples, including a focus on particular high-risk occupational groups or deriving samples from worker's compensation records. These practices may result in the overrepresentation of minority workers (e.g., minorities are more likely to be employed in high-risk jobs than Whites²³) or the under-representation of injury incidence in minorities (e.g., minorities may be less likely than Whites to report workplace injuries for fear of job loss).²⁴

Like the relationship between racial/ ethnic group membership and non-fatal work-related illness or injury, the impact of workplace racial discrimination on the race/ ethnicity-illness/ injury relationship is not clear. Racial discrimination can be thought of two main, but not mutually exclusive, types: *institutional* racial discrimination and *interpersonal* racial discrimination.²⁵ Institutional racial discrimination refers to discriminatory policies built into an organizational structure (e.g., not promoting minority employees beyond a certain level), while interpersonal racial discrimination refers to discriminatory interactions between individuals. The work that has been done in this area largely focuses on instances of institutional racial discrimination, such as the structure of minorities' work environments (e.g., more likely to be unemployed, more likely to be employed in hazardous occupations) and differential stress exposure at work (e.g., repetitive work, physically demanding tasks, loud noise, and work with dangerous chemicals).²⁶⁻²⁸ To our knowledge, however, no work has been done to examine how other facets of the workplace, such as incidents of interpersonal racism or discrimination, contribute to the race/ethnicity-illness/injury relationship. Given the strong evidence of the negative impact of racial discrimination on physical and mental health outcomes,²⁹⁻³² it is important to also address how these kinds of workplace stressors relate to disparities in occupational health. It is likely that workers subject to racial discrimination would have an increased risk of work related illness/injury or assault resulting from increased stress exposure. Research has found that negative interpersonal experiences in the workplace, such as harassment, have negative effects on mental health above and beyond the effects of other types of job stressors.^{33, 34} Negative effects on mental health may, by extension, lead to negative physical health conditions that influence work-related health outcomes. In fact, interpersonal harassment has been shown to predict increased odds of experiencing occupational illness, injury, or assault above and beyond task-related job stressors in a sample of current and former university employees.³⁵ However, potential racial/ethnic differences in these relationships were not tested

To address this gap in the literature, we examine whether experiences of racial discrimination at work serve as a mechanism through which race/ethnicity is associated with risk for work-related illness, injury, or assault across two time points. We hypothesize that: (1) race/ethnicity will be significantly related to the odds of self-reported illness/injury/ assault in a national employed sample, beyond the effects of occupation and job stressors, and (2), that experiences of racial discrimination at work will mediate the effects of race/ ethnicity on the odds of illness/injury/assault.

Methods

Study sample

The sample derives from a random digit dial (RDD) telephone survey conducted by the second and third authors of this article, examining the prevalence and physical and mental health outcomes of different forms of harassment in a national (continental U.S.) sample of

employed adults. Detailed descriptions of the sample selection and interview process have been described elsewhere.³⁶ Of 4,116 households with eligible individuals, $n=2,151$ (52.3%) agreed to participate (1,067 women and 1,083 men, with 1 person not specifying gender) at wave 1 (W1) while 1,418 participated at wave 2 (W2) (66% retention rate; 722 women and 696 men). Listwise deletion of missing data in the present analysis resulted in study sample sizes which varied slightly by model, ranging from 1256-1259 individuals.

Measures

Race/ethnicity—At W1, participants were asked to report their race/ethnicity, choosing from the following categories: American Indian or Alaskan Native, Asian or Pacific Islander, Hispanic/Latino, Black, White, Multiracial, or Other. Due to the small frequencies represented in some categories, respondents were categorized into one of four racial/ethnic groups: (1) White, (2) Black (3) Hispanic, and (4) Other. We created dummy variables to represent race, with the “White” group as the reference category.

Racial/ethnic discrimination at work—Racial/ethnic discrimination at work was measured at W1 by the item, “In the past 12 months at work, have you been discriminated against or harassed because of your race, ethnicity, color, or national origin?” (1=yes, 0=no). This item was modeled after the racial discrimination item in Noh et al.’s work,³⁷ and should be considered a conservative estimate of the subjective experience of discrimination.³³⁸⁸

Work-related illness/injury/assault—At both W1 and W2, respondents reported whether they suffered an illness, injury or assault in the past 12 months as a result of being at their workplace or performing workplace duties (1=yes, 0=no).

Socio-demographic controls—The effects of the following variables on the odds of reporting illness/injury/assault were controlled statistically: gender, age, occupation, income, education, job stress and W1 illness/injury/assault. Age was scored continuously in years. Occupation was scored based on two-digit Standard Occupational Classification codes. Due to small numbers in some categories, we combined occupations into broader categories: Management/Business, Professional (e.g., computer, math, engineering, science, legal, education, healthcare occupations), Service (e.g., food preparation, maintenance, healthcare support occupations), Sales/Office, and Construction/Extraction/Production/Transportation (Farming, Fishing, Forestry, and Military professions were not well represented, and were dropped from the analyses). Education was an ordinal scale ranging from 1 (8th grade or less) to 8 (master’s degree or higher), and income was an ordinal scale ranging from 1 (less than \$10,000) to 6 (greater than \$70,000) (see Table 1 for corresponding categories). Gender (1= women, 0= men) and baseline illness/injury/assault (1 = yes, 0 = no) were coded in a binary format.

Job characteristics controls—Job pressure and job threat were measured by a shortened 7-item version of the Stress in General Scale (SIG).³⁹ The SIG was developed as a measure of general workplace stress, applicable across professions, industries, and cultures. Job pressure (3 items; $\alpha_{W1} = .66$; $\alpha_{W2} = .65$) assesses the extent to which one’s job is seen as pressured, hectic or relaxed and represents a sense of time pressure. Job threat (4 items; $\alpha_{W1} = .65$; $\alpha_{W2} = .64$) measures the extent to which one’s job is seen as under control, nerve-wracking, hassled or smooth-running, reflecting an overall threatening or negative quality of the job. Response categories were “yes”, “no”, and “can’t decide”. Scales were computed such that higher numbers represent higher levels of job pressure and threat. An indicator for change in job stressors between waves 1 and 2 was also computed to capture the effects of change in level of job stress on work-related illness/injury/assault.

Analytical Strategy

Methods described by Baron and Kenny⁴⁰ were used to test mediation of the race/ethnicity-illness/injury/assault relationship by racial discrimination. Racial discrimination mediates the relationship between race/ethnicity and illness/injury/assault if 1) race/ethnicity is significantly associated with experiences of racial discrimination, 2) racial discrimination is significantly associated with the likelihood of experiencing work-related illness/injury/assault, controlling for race/ethnicity, 3) race/ethnicity is significantly related to work-related illness/injury/assault, and 4) the effect of race/ethnicity on the likelihood of experiencing work-related illness/injury/assault appreciably decreases when the effects of racial discrimination are added to the model. We used the Sobel test,⁴¹ which is used to test whether a mediator carries the influence of an independent variable to a dependent variable, to assess the significance and magnitude of the mediated effect.

To test our hypotheses, we first used χ^2 tests of association (for categorical outcomes), t-tests and/or one-way ANOVAs (for continuous outcomes) to test relationships among independent, mediating and dependent variables. Second, we used a series of logistic regression models to examine the effect of racial discrimination on the odds ratios associated with race/ethnicity, controlling for sex, age, occupation, income, education, job stress, and W1 illness/injury/assault. A reduction in the odds ratios associated with race/ethnicity when racial discrimination is added to the model would indicate that racial discrimination mediates some of the effect of race/ethnicity on illness/injury/assault. Full mediation is established if the effect of race/ethnicity is no longer significant when racial discrimination is included in the model. Results from logistic regression models are shown as odds ratios (OR) and 95% confidence intervals (CI). We used the Hosmer-Lemeshow test⁴² to assess the fit of the regression models.

All analyses reflect weighted data to reduce biases in estimates. Data were weighted in two stages: first, we applied selection weights to weight for different probability of selection (based on number of phone lines and number of eligible adults in the household). Second, we applied post-stratification weights to ensure that the marginal distribution of several sample variables corresponded to 2003 Current Population Survey data for the adult employed population. The variables used in the weighting procedure were age, gender, race, Census Bureau region, and education. All analyses were performed using SPSS, and $p < .05$ was used to determine significance.

Results

Characteristics of the sample

Table 1 presents descriptive statistics for all variables, overall and separately by race/ethnicity. White respondents represent a majority of the sample. The racial/ethnic composition of the sample was similar to that reported in Roberts and colleagues' analysis of data from working individuals surveyed as part of the 2002 General Social Survey, another national study.⁴³ Whites were more likely to be older ($p = .001$), have higher income ($p = .000$), higher education ($p = .000$) and higher job pressure scores at W1 ($p = .003$) than their non-White counterparts. Black respondents were more likely than all other races to report experiencing discrimination at work ($p = .000$) and reported the highest levels of job threat scores at both waves ($p = .013$, $p = .001$). Experiences of illness/injury/assault were more prevalent among Black and Hispanic respondents at both waves of data collection ($p = .002$, $p = .000$), though Hispanics were more likely than all races to experience work-related illness/injury/assault at W2. Hispanic respondents were also concentrated among those with the lowest levels of education. The distributions for those in the 'other race'

category were similar to that of Blacks, with the exception of experiences of racial discrimination and illness/injury/assault.

The relationship between race/ethnicity and racial discrimination

As hypothesized, race/ethnicity was related to experiences of racial discrimination at work. The odds of reporting racial discrimination at work were between 3 and 8 times greater among minorities compared with Whites (Blacks: OR= 8.29, 95% CI = 4.61, 14.90; Hispanics: OR = 10.13, 95% CI = 5.91, 17.35; Other Races: OR = 2.62, 95% CI = 1.05, 6.57).

The relationship between racial discrimination and work-related illness/injury/assault

Table 2 presents the relationships between racial discrimination and illness/injury/assault, adjusting for the control variables and race/ethnicity. Model 2 shows that racial discrimination was significantly associated with the odds of W2 illness/injury/assault. Those who experienced discrimination at work were two times as likely as those without discrimination experiences to report illness/injury/assault.

The relationship between race/ethnicity and work-related illness/injury/assault

The odds of illness/injury/assault were double among Hispanics compared with White respondents; Blacks and those from 'other races' did not differ significantly from Whites.

Mediational Analyses

The test of the hypothesis of mediation by racial discrimination was conducted in two steps in the logistic regression analysis shown in Table 2. Step I examined the relationship between race/ethnicity and W2 illness/injury/assault, adjusting for control variables (Model 1); Step II introduced racial discrimination in the regression model (Model 2). Model 1 indicates that after adjusting for control variables, Hispanic respondents were significantly more likely than whites to report experiencing work-related illness/injury/assault at W2. Inclusion of racial discrimination in the regression model (Model 2) substantially reduced the odds ratio associated with race/ethnicity (from 1.99 to 1.69) for Hispanics versus white respondents to a non-significant value. The Sobel test confirmed that this mediated effect was statistically significant ($z = 3.64$; $p = .000$). This finding showed racial discrimination to have a full mediating effect for Hispanic respondents.

Discussion

This study examined the extent to which racial discrimination at work explains the effect of race/ethnicity on the odds of experiencing work-related illness/injury/assault. Minorities reported experiencing more racial discrimination than Whites, replicating the findings of other studies on experiences of racial discrimination.^{44, 45} After controlling for factors strongly associated with race/ethnicity and the likelihood of reporting work-related illness/injury/assault, we found that racial discrimination at work is an important mediating factor influencing work-related health experiences among Hispanic respondents. Specifically, Hispanic respondents were significantly more likely to experience work-related illness/injury/assault, and these odds were influenced by their experiences with racial discrimination on the job. Our findings support Friedman and Forst's recent findings that Hispanics are more likely than Whites to suffer a traumatic injury at work.⁹

Racial discrimination can vary in form and how it manifests in individuals' lives. Whether institutional or interpersonal, the experience of discrimination has been shown to be a particularly powerful health risk factor for minorities.²⁹⁻³² Individual characteristics also impact the way in which one reacts to racial discrimination. Those who internalize the

experience rather than recognizing and addressing the issue are more likely to experience negative health effects.^{46, 47} Future research should include a more detailed assessment of subjects' reactions to and coping strategies to deal with racial discrimination determine whether these factors further increase the risk of negative health-related outcomes for minority workers.

The fact that discrimination and harassment tends to be persistent across time³⁴ presents increased risk for an associated onset and persistence of work-related health outcomes. Hispanics, in particular, represent a fast growing population in American society. Their negative experiences at work may be further complicated by cultural and language barriers that locate them in powerless positions and deter help-seeking for workplace problems and reporting of occupational safety violations. Moreover, for many Hispanics, their experiences of workplace harassment and discrimination are likely confounded with issues of unfair treatment due to their race, ethnicity and immigrant status outside of work.^{42, 48}

One intriguing finding is that racial harassment and discrimination mediated the relationship between race/ethnicity and work-related illness/injury/assault for Hispanic workers, but not Black workers, despite the fact that both groups reported higher exposure to racial harassment and discrimination at work compared to Whites. It is possible that recent media attention to issues of illegal immigration have increased resentment against Hispanic workers (whether or not they are actually immigrants). Consequently, Hispanic workers may be subject to more severe forms of harassment and discrimination compared to Black workers, even though overall incident of harassment and discrimination may be similar. Alternatively, Hispanics may experience more safety-relevant forms of discrimination, such as a lack of training sessions or materials in Spanish (for those who are not completely fluent in English). Future research should better assess the nature of harassing and discriminatory experiences, using more detailed measures that include characteristics of the situation, such as the duration and severity of discrimination, and organizational relationships between perpetrator and targets. Because it is often difficult or impractical to capture such detailed information in a survey, qualitative research in this area could help provide the necessary insight into why experiences of workplace racial harassment and discrimination are particularly crucial to the safety of Hispanic workers. This information would be important to the development of prevention and intervention efforts targeted to this vulnerable population.

Overall, the results of this study underscore how important it is that public health research examine how intersecting systems of inequality work to affect occupational health. In terms of clinical implications, given the propensity for racial harassment and discrimination to be linked to occupational illness/injury/assault for Hispanic workers, psychological distress related to the illness, injury, or assault may be compounded by psychological distress resulting from racial harassment or discrimination. Thus, this population may be at particular risk for depression. Health practitioners treating occupational maladies should assess mental health status to determine need for referral, particularly with Hispanic workers.

There are a number of limitations to this study that should be addressed in further research. The first relates to our crude indicators of race/ethnicity and work related illness/injury/assault. Future studies need to better specify the nature and extent of these key variables to better understand their implications for occupational health. This may be achieved by incorporating special efforts to recruit and retain racial/ethnic minority group members, to achieve a more representative sample of all groups and assure that meanings of race, ethnicity and culture can be better specified. In particular, information about members from immigrant and minority groups should include measures of specific ethnic affiliation, length

of stay in the U.S., immigrant legal status, language proficiency, acculturation and assimilation. Type of illness, injury, or assault should also be assessed in more detail, to clarify whether racial harassment and discrimination more strongly influences certain health outcomes compared to others, and in which racial/ethnic groups these associations are the strongest.

In addition to the type of illness, injury or assault, distinctions between the degree or severity of outcomes should also be established, as the mechanisms by which race/ethnicity influence health outcomes may be conditioned by the nature of the outcome in question. For example, the relationship between racial discrimination and risk of a work-related injury or assault leading to hospitalization or missed days of work may be different than the relationship between racial discrimination and risk of a less serious injury or illness that is not disruptive to performing one's job duties. Research in these areas would help clarify how and where to best target prevention efforts aimed at reducing racial harassment and discrimination, as well as occupational safety interventions.

Another limitation that should be addressed in future research relates to issues of reporting bias. Self reports of racial discrimination and illness, injury or assault may underestimate the nature and effect of race and racial discrimination on work-related experiences, especially when the meanings of discrimination may differ among social groups. Racial/ethnic groups may differ in the degree to which they experience, interpret and recall racial discrimination and work-related health outcomes. The influence of levels of non-response should also be considered when interpreting these findings, as our telephone interview was limited to land lines, thus potentially excluding those that primarily use cell phones.

Finally, future research should further investigate the direct and indirect impact of other forms of workplace harassment and discrimination (e.g., sexual harassment, bullying) on work-related health outcomes, to determine whether such experiences have a broader, unrealized impact on workplace health and safety for non-Hispanic in addition to Hispanic employees. Future studies of workplace harassment should also include a measure of safety climate—it is likely that workplaces tolerant of workplace harassment may also tolerate unsafe workplace practices (e.g., lack of safety equipment). If this is the case, it would suggest the utility of partnering workplace health and safety interventions with organizational development efforts to build an overall organizational culture of respect.

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REFERENCES

1. Glover MJ, Greenlund KJ, Ayala C, Croft JB. Racial/ ethnic disparities in prevalence, treatment, and control of hypertension—United States, 1999-2002. *JAMA*. 2005; 293:923–925.
2. Sequist TD, Adams A, Zhang F, Ross-Degnan D, Ayanian JZ. Effect of quality improvement on racial disparities in diabetes care. *Arch Intern Med*. 2006; 166:675–681. [PubMed: 16567608]
3. Bach PB, Cramer LD, Warren JL, Begg CB. Racial differences in the treatment of early-stage lung cancer. *N Engl J Med*. 1999; 37:68–77.
4. Hahn RA, Eberhardt S. Life expectancy in four US racial/ ethnic populations: 1990. *Epidemiology*. 1995; 6:350–355. [PubMed: 7548340]
5. Wong MD, Shapiro MF, Boscardin WJ, Ettner SL. Contribution of major diseases to disparities in mortality. *N Engl J Med*. 2002; 347:1585–1592. [PubMed: 12432046]

6. Anderson, RN. National vital statistics reports. Vol. 48. National Center for Health Statistics; Hyattsville, Md: 2001. United States life tables, 1998. (DHHS publication no. (PHS) 2001-1120.)
7. Schoeni RF, Martin LG, Andreski PM, Freedman VA. Persistent and growing socioeconomic disparities in disability among the elderly: 1982-2002. *Am J Public Health*. 2005; 95:2065–2070. [PubMed: 16254235]
8. Mendes de Leon CF, Barnes LL, Bienias JL, Skarupski KA, Evans DA. Racial disparities in disability: recent evidence from self-reported and performance-based disability measures in a population-based study of older adults. *J Gerontol*. 2005; 60B:S263–S271.
9. Friedman LS, Forst L. Ethnic disparities in traumatic occupational injury. *J Occup Environ Med*. 2008; 50:350–358. [PubMed: 18332785]
10. Pransky G, Moshenberg D, Benjamin K, Portillo S, Thackery JL, Hill-Fotouhi C. Occupational risks and injuries in non-agricultural immigrant Latino workers. *Am J Ind Med*. 2002; 42:117–123. [PubMed: 12125087]
11. Loomis D, Richardson D. Race and the risk of fatal injury at work. *Am J Public Health*. 1998; 88:40–44. [PubMed: 9584031]
12. Richardson DB, Loomis D, Bena J, Bailer J. Fatal occupational injury rates in southern and non-southern states, by race and Hispanic ethnicity. *Am J Public Health*. 2004; 94:1756–1761. [PubMed: 15451746]
13. Herbert R, Landrigan PL. Work-related death: a continuing epidemic. *Am J Public Health*. 2000; 90:541–545. [PubMed: 10754967]
14. Cherniak, M. *The Hawk's Nest Incident: America's Worst Industrial Disaster*. Yale University Press; New Haven, Conn: 1989.
15. Friedman-Jimenez, G.; Claudio, L. Environmental justice. In: Rom, WN., editor. *Environmental and Occupational Medicine*. 3rd. Lippincott-Raven Publishers; Philadelphia, Pa: 1998. p. 1731-1740.
16. Lloyd JW. Long-term mortality study of steel workers. V. Respiratory cancer in coke plant workers. *J Occup Med*. 1971; 13:53–68. [PubMed: 5546197]
17. Robinson JC. Trends in racial inequality and exposure to work-related hazards, 1968-1986. *Milbank Q*. 1987; 65(Suppl 2):404–420. [PubMed: 3451063]
18. Robinson JC. Exposure to occupational hazards among Hispanics, blacks and non-Hispanic whites in California. *Am J Public Health*. 1989; 79:629–630. [PubMed: 2631689]
19. Simpson CL, Severson RK. Risk of injury in African American hospital workers. *J Occup Environ Med*. 2000; 42:1035–1040. [PubMed: 11039167]
20. French MT, Zarkin GA. Racial differences in exposure to on-the-job hazards. *Am J Public Health*. 1990; 80:89–90. [PubMed: 2293814]
21. Oh JH, Shin EH. Inequalities in nonfatal work injury: the significance of race, human capital, and occupations. *Soc Sci Med*. 2003; 57:2173–2182. [PubMed: 14512247]
22. Strong LL, Zimmerman FJ. Occupational injury and absence from work among African American, Hispanic, and non-Hispanic white workers in the national longitudinal survey of youth. *Am J Public Health*. 2005; 95:1226–1232. [PubMed: 15983275]
23. Murray LR. Sick and tired of being sick and tired: scientific evidence, methods, and research implications for racial and ethnic disparities in occupational health. *Am J Public Health*. 2003; 93:221–226. [PubMed: 12554573]
24. Lipscomb HJ, Loomis D, McDonald MA, Argue RA, Wing S. A conceptual model of work and health disparities in the United States. *Int J Health Serv*. 2006; 36:25–50. [PubMed: 16524164]
25. Krieger N, Rowley DL, Herman AA, Avery B, Phillips MT. Racism, sexism, and social class: implications for studies of health, disease, and well-being. *Am J Prev Med*. 1993; 9:82–122. [PubMed: 8123288]
26. Berdahl TA, McQuillan J. Occupational racial composition and nonfatal work injuries. *Soc Probl*. 2008; 55:549–572.
27. Frumkin H, Walker ED, Friedman-Jimenez G. Minority workers and communities. *Occup Med*. 1999; 14:495–517. [PubMed: 10378973]

28. Smith, JP. Race and ethnicity in labor market: trends over the short and long term. In: Smelser, NJ.; Wilson, WJ.; Mitchell, F., editors. *American Becoming: Racial Trends and Their Consequences*. Vol. II. National Academy Press; Washington DC: 2001. p. 52-97.
29. Krieger, N. Racial discrimination and health. In: Berkman, L.; Kawachi, I., editors. *Social Epidemiology*. Oxford University Press; Oxford, England: 2000. p. 36-75.
30. Bhui K, Stansfeld S, McKenzie K, Karlsen S, Nazroo J, Weich S. Racial/ ethnic discrimination and common mental disorders among workers: findings from the EMPIRIC study of ethnic minority groups in the United Kingdom. *Am J Public Health*. 2005; 95:496–501. [PubMed: 15727983]
31. Gee GC. A multilevel analysis of the relationship between institutional and individual racial discrimination and health status. *Am J Public Health*. 2002; 92:615–623. [PubMed: 11919062]
32. Karlsen S, Nazroo JY. Relation between racial discrimination, social class, and health among ethnic minority groups. *Am J Public Health*. 2002; 92:624–631. [PubMed: 11919063]
33. Munson LJ, Hulin C, Drasgow F. Longitudinal analysis of dispositional influences and sexual harassment: effects on job and psychological outcomes. *Personnel Psychol*. 2000; 53:21–46.
34. Rospenda KM, Richman JA, Wislar JS, Flaherty JA. Chronicity of sexual harassment and generalized work-place abuse: effects on drinking outcomes. *Addiction*. 2000; 95:1805–1820. [PubMed: 11177496]
35. Rospenda KM, Richman JA, Ehmke JLZ, Zlatoper KW. Is workplace harassment hazardous to your health? *J Bus Psychol*. 2005; 20:95–110.
36. Shannon CA, Rospenda KM, Richman JA. Workplace harassment patterning, gender, and utilization of professional services: findings from a US national study. *Soc Sci Med*. 2007; 64:1178–1191. [PubMed: 17166642]
37. Noh S, Beiser M, Kaspar V, Hou F, Rummens J. Perceived racial discrimination, depression, and coping: a study of Southeast Asian refugees in Canada. *J Health Soc Behav*. 1999; 40:193–207. [PubMed: 10513144]
38. Williams, DR.; Spencer, MC.; Jackson, JS. Race, stress and physical health: the role of group identity. In: Contrada, RJ.; Ashmore, RD., editors. *Self, Social Identity, and Physical Health*. Oxford University Press Inc; New York, NY: 1999. p. 71-100.
39. Stanton JM, Balzer WK, Smith PC, Parra LF, Ironson G. A general measure of work stress: The stress in general scale. *Educational and Psychological Measurement*. 2001; 61:866–888.
40. Baron RM, Kenny DA. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J Pers Soc Psychol*. 1986; 51:1173–1182. [PubMed: 3806354]
41. Sobel, ME. Asymptotic confidence intervals for indirect effects in structural equation models. In: Leinhardt, S., editor. *Sociological Methodology*. American Sociological Association; Washington, DC: 1982. p. 290-293.
42. Hosmer, DW.; Lemeshow, S. *Applied Logistic Regression*. John Wiley & Sons Inc; New York: 1989.
43. Roberts RK, Swanson NG, Murphy LR. Discrimination and occupational mental health. *Journal of Mental Health*. 2004; 13:129–142.
44. Deitch EA, Barsky A, Butz RM, Chan S, Brief AP, Bradley JC. Subtle yet significant: the existence and impact of everyday racial discrimination in the workplace. *Human Relations*. 2003; 56:1299–1324.
45. Kessler RC, Mickelson KD, Williams DR. The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *J Health Soc Behav*. 1999; 40:208–230. [PubMed: 10513145]
46. Krieger N. Racial and gender discrimination: risk factors for high blood pressure? *Soc Sci Med*. 1990; 30:1273–1281. [PubMed: 2367873]
47. Ruggerio KM, Taylor DM. Coping with discrimination: how disadvantaged group members perceive the discrimination that confronts them. *J Pers Soc Psychol*. 1995; 68:826–838.
48. Dong X, Plattner JW. Occupational fatalities of Hispanic construction workers from 1992 to 2000. *Am J Ind Med*. 2004; 45:45–54. [PubMed: 14691968]

Table 1

Means and Standard Deviations for Independent and Dependent Variables

N (observations)	OVERALL		WHITE		BLACK		HISPANIC		OTHER		F	p
	Mean	SD	n= 1041 (76%)		n= 114 (8%)		n= 149 (11%)		n= 67 (5%)			
			Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Sociodemographics												
Gender												
Females	.47	-	.47	-	.54	-	.40	-	.43	-		
Males	.53	-	.53	-	.47	-	.60	-	.57	-	5.07	.167
Age	43.17	12.48	43.80	12.49	42.22	12.83	39.69	11.39	42.05	12.96	5.17	.001
Occupation												
Management/Business	.15	-	.15	-	.14	-	.14	-	.09	-		
Professional	.27	-	.28	-	.25	-	.18	-	.30	-		
Service	.12	-	.12	-	.16	-	.16	-	.11	-		
Sales/Office	.22	-	.23	-	.20	-	.18	-	.24	-		
Construction, Extraction	.24	-	.23	-	.26	-	.33	-	.26	-	17.25	.140
Production, Transportation												
Income												
< \$10,000	.02	-	.01	-	.04	-	.06	-	.03	-		
\$10,001 to \$20,000	.07	-	.05	-	.09	-	.19	-	.08	-		
\$20,001 to \$30,000	.12	-	.11	-	.12	-	.17	-	.14	-		
\$30,001 to \$50,000	.25	-	.24	-	.34	-	.25	-	.30	-		
\$50,001 to \$70,000	.22	-	.23	-	.18	-	.17	-	.11	-		
> \$70,000	.32	-	.36	-	.24	-	.17	-	.33	-	82.96	.000
Education												
8th grade or less	.03	-	.005	-	.02	-	.18	-	.02	-		
Some high school	.04	-	.03	-	.04	-	.11	-	.05	-		
High school graduate	.32	-	.32	-	.36	-	.29	-	.37	-		
Some college	.19	-	.19	-	.25	-	.12	-	.19	-		
Associate or certificate	.11	-	.12	-	.09	-	.07	-	.06	-		
Bachelor degree	.16	-	.17	-	.15	-	.15	-	.16	-		

	OVERALL		WHITE		BLACK		HISPANIC		OTHER		F	p
	n = 1382		n = 1041 (76%)		n = 114 (8%)		n = 149 (11%)		n = 67 (5%)			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
N (observations)												
Some graduate work	.02	-	.03	-	.009	-	.007	-	.02	-		
Master's degree or higher	.13	-	.15	-	.09	-	.07	-	.13	-	202.03	.000
Job Stressors												
T1 Job Pressure	6.30	3.10	6.45	3.01	5.77	3.43	5.56	3.35	6.21	3.10	4.78	.003
T2 Job Pressure	6.15	3.16	6.24	3.16	5.72	3.10	5.93	3.08	5.71	3.38	1.51	.210
T1 Job Threat	3.99	3.72	3.83	3.68	4.88	4.23	4.08	3.42	4.69	3.89	3.63	.013
T2 Job Threat	3.56	3.60	3.41	3.60	4.77	4.15	3.43	3.01	4.23	3.40	5.31	.001
Racial discrimination at work, T1												
Yes	.09	-	.04	-	.30	-	.26	-	.10	-	144.06	.000
Experienced work-related illness/injury/assault												
T1 Yes	.15	-	.13	-	.25	-	.19	-	.21	-	15.04	.002
T2 Yes	.15	-	.12	-	.22	-	.24	-	.15	-	19.34	.000

Note: All statistics were based on weighted data; Means for categorical variables represent proportion in that category; S.D. = standard deviation; χ^2 = Pearson chi-square statistic; F = F test statistic for one-way ANOVA; p = P Value; Bolded P values indicate statistically significant; Percentages may not add up to 100 due to missing data.

Table 2

Test of racial discrimination at work as a mediator in the relationship between race and T2 work-related illness/injury/assault.

Independent Variable	Model 1 (race and control variables)			Model 2 (race, control variables and mediator)		
	OR	95% C.I.	p	OR	95% C.I.	p
<i>Step I. Racial category</i>						
White (reference)	1.00			1.00		
Black	1.40	[.76-2.55]	.279	1.17	[.62-2.20]	.629
Hispanic	1.99	[1.20-3.30]	.008	1.69	[.99-2.88]	.054
Other	1.02	[.44-2.35]	.963	.97	[.42-2.24]	.945
<i>Step II. Mediator variable</i>						
Racial discrimination				1.78	[1.05-3.03]	.034
Nagelkerke R ²	.25			.25		

Note. Analysis controls for sex, age, occupation, education, income, T1 job pressure, change in job pressure, T1 job threat, change in job threat, and T1 illness/injury/assault; OR = odds ratio; CI = confidence interval; p=P Value; Bolded P values indicate statistically significant.