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Perceived Racial/Ethnic Discrimination, Problem Behaviors, and Mental Health among Minority Urban Youth

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Abstract

Objectives—We examined perceived frequency and intensity of racial/ethnic discrimination and associations with high-risk behaviors/conditions among adolescents.

Design—With surveys from 2,490 primarily low socioeconomic status, racial/ethnic minority adolescents, we used regression analysis to examine associations between racial/ethnic discrimination and behavioral health outcomes (alcohol use, marijuana use, physical aggression, delinquency, victimization, depression, suicidal ideation, and sexual behaviors).

Results—Most adolescents (73%) experienced racial/ethnic discrimination and 42% of experiences were “somewhat-” or “very disturbing.” Adolescents reporting frequent and disturbing racial/ethnic discrimination were at increased risk of all measured behaviors, except alcohol and marijuana use. Adolescents who experienced any racial/ethnic discrimination were at increased risk for victimization and depression. Regardless of intensity, adolescents who experienced racial/ethnic discrimination at least occasionally were more likely to report greater physical aggression, delinquency, suicidal ideation, younger age at first oral sex, unprotected sex during last intercourse, and more lifetime sexual partners.

Conclusion—Most adolescents had experienced racial/ethnic discrimination due to their race/ethnicity. Even occasional experiences of racial/ethnic discrimination likely contribute to maladaptive behavioral and mental health outcomes among adolescents. Prevention and coping strategies are important targets for intervention.

INTRODUCTION

Pronounced racial/ethnic inequalities in health have encouraged a wealth of studies examining racism as a potential determinant of health inequalities (Williams, 1999). Racism is traditionally defined as a set of ideas or beliefs that categorize population groups into “races” and attribute certain social characteristics to such groups. Racism may develop into prejudice (negative attitudes and beliefs toward racial groups), and in turn, prejudice may induce discrimination (differential treatment of racial groups by both individuals and social institutions) (Bonilla-Silva, 1997). Perceived racial (or ethnic) discrimination is an important aspect of racism that has increasingly received empirical attention as a psychological stressor that could have consequences for health and implications for understanding inequalities in health (Williams and Mohammed, 2009).

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Three recent systematic reviews and a meta-analysis have found robust associations between perceived racial discrimination and a broad array of adverse health consequences across groups in different countries and cultures (Paradies, 2006, Pascoe and Richman, 2009, Williams and Mohammed, 2009, Williams et al., 2003). The most persistent findings from these reviews are strong associations between perceived racial discrimination and negative mental health outcomes including depression and anxiety, psychological distress, and general well being (e.g., self-esteem, life satisfaction, quality of life). Weaker, but consistent associations exist for negative physical health outcomes including hypertension, cardiovascular disease, infant low birth weight and prematurity, and a multitude of diseases, physical conditions, and general indicators of illness (Paradies, 2006, Pascoe and Richman, 2009, Williams and Mohammed, 2009, Williams et al., 2003). Evidence across many cultures and countries—such as Black Americans (Chae et al., 2012), American Indians (Chae and Walters, 2009), Brazilians (Bastos et al., 2012), Chinese (Chou, 2012), Spaniards (Agudelo-Suárez et al., 2011), Norwegians (Bals et al., 2010), and South Africans (Moomal et al., 2009)—has implicated racial discrimination as an important determinant of health and contributor to racial/ethnic inequalities; however, this is still an emerging field in some countries (Harris et al., 2012). Although racial discrimination is a topic of international relevance, the majority of this research has been conducted within the United States (Bastos et al., 2010).

Despite the consistency of findings that link perceived racial discrimination with poor health, the extant research does not adequately address the mechanisms and processes by which perceptions of racial/ethnic discrimination might adversely affect health (Paradies, 2006, Pascoe and Richman, 2009, Williams and Mohammed, 2009, Williams et al., 2003). While mechanisms of affect are complex and no single one is mutually exclusive, one possible pathway that racial/ethnic discrimination may affect health is through increased stress. Stress affects health through causing negative emotional states such as depression, anxiety and lower self-esteem, which can exert both biological and behavioral stress responses that can undermine health (Cohen et al., 1995). Behavioral coping responses to manage stress and other negative emotional states can influence participation in substance use and other unhealthy behaviors (Sinha, 2001). Consistent with the literature linking stress to substance use, a growing number of studies report associations between perceived racial discrimination and alcohol, tobacco, and other substance use (Borrell et al., 2010, Crengle et al., 2012, Gee et al., 2007, Martin et al., 2003). However, few studies have assessed how perceived racial discrimination might lead to other problem behaviors—such as delinquency (Martin et al., 2011), aggression (Borders and Liang, 2011), victimization (Stueve and O'Donnell, 2008), and risky sexual behavior (Ford et al., 2009). Moreover, the coverage of population groups has been selective in this literature, which gives limited attention to children and adolescents, who are particularly vulnerable to stress, anxiety, depression and low self-esteem. Childhood and adolescence are critical periods of human development, and strong evidence suggests that experiences of intense acute or chronic stress, or other negative emotional states, during these crucial periods may have long-term and irreversible effects on physical growth, emotional development, health behavior, and chronic disease (Pervanidou and Chrousos, 2012). Exposure to even mild uncontrollable stress during adolescence can impair cognitive functioning, judgment, and inhibition of inappropriate behaviors, and thereby increase susceptibility to drug addiction and neuropsychiatric disorders (Pervanidou and Chrousos, 2012). Therefore, understanding one cause of stress, depression, anxiety and low self-esteem among adolescents will aid understanding of potential intervention targets to improve adolescent health.

The frequency of racial/ethnic discrimination experiences (i.e., how often they occur in daily life) and the intensity of those experiences (i.e., how stressful they were) may influence the likelihood of negative health outcomes (Pascoe and Richman, 2009). Disturbing and

upsetting perceptions of racial/ethnic discrimination have great potential for psychological injury (Carter, 2007). Yet, the literature has neglected assessing the subjective severity of discriminatory incidents (Williams and Mohammed, 2009). The present study examined perceived frequency and intensity of racial/ethnic discrimination experiences and associations with a range of problem behaviors and mental health outcomes in a large sample of urban, low-income, racially and ethnically-diverse adolescents living in Chicago (United States), specifically testing for differences by race/ethnicity and gender.

METHODS

Data were part of a group-randomized controlled trial of alcohol preventive intervention for multi-ethnic urban youth (Komro et al., 2008). The present sample included 2,490 African American, Hispanic and White adolescents who completed a self-report survey when aged 17–18 years. Participants completed mail-, web- or school-based surveys during the 2008–2009 school year (53% response rate (Tobler and Komro, 2011)). Any student who had previously completed a survey as part of the intervention evaluation when in 6th, 7th, or 8th grade was eligible to complete the follow-up survey. Data collection occurred in three phases. First, mail- and Internet-based surveys with postcard and telephone follow-up reminders for non-responders were implemented from October 2008 to April 2009. In the second phase (April–June 2009), the survey was administered or distributed to non-responders enrolled in Chicago public high schools. The third phase (July–October 2009) involved additional intensive tracking and shipping the survey packets to non-responders via a courier service. In all phases, respondents were mailed \$30 cash after completion of the survey. Prior to all survey administrations, parents and students were given opportunity to refuse participation. The Institutional Review Board at the University of Florida approved data collection protocols and analyses.

Independent Variable

The independent variable—perceived racial/ethnic discrimination—was measured with a two-item composite variable reflecting the frequency and intensity of racial/ethnic discrimination experiences. Frequency of racial/ethnic discrimination was assessed by asking: “How often have you experienced any kind of discrimination due to your race/ethnicity?”. Response options were “never”, “hardly ever”, “a few times a year”, “monthly” and “daily”. For analysis and interpretation, “A few times a year” was renamed “occasionally” while “monthly” and “daily” responses were recoded into an “often” category. Intensity of racial/ethnic discrimination was assessed by asking: “How would you describe the discrimination you have experienced?”. Response options were: “I have not experienced any kind of discrimination due to my race/ethnicity,” “not very disturbing,” “somewhat disturbing,” or “very disturbing.” Students were asked to respond to both items. Based on response options to these two items, a five category, ordered response composite was created. The categories, in order of increasing risk, were: “never experienced discrimination,” “hardly ever experienced any discrimination” (at any intensity), “occasionally or often experienced discrimination that was not very disturbing,” “occasionally experienced discrimination that was somewhat disturbing,” and “occasionally or often experienced discrimination that was somewhat or very disturbing.”

Dependent Variables

We examined associations between racial/ethnic discrimination and a range of substance use, problem behavior, mental health and sexual behavior outcomes. The following describes these measures in detail and provides relevant descriptive statistics.

Alcohol Use—Participants were asked: “During the last 30 days, on how many occasions, or times, have you had alcoholic beverages to drink?” (Bachman et al., 2010). Response options were “never” (65.2%), “1–2 occasions” (18.0%), “3–5 occasions” (9.5%), “6–9 occasions” (4.3%), “10–19 occasions” (2.2%), “20–39 occasions” (0.5%), or “40 or more occasions” (0.3%). Heavy episodic alcohol use was assessed by asking: “Think back over the last two weeks. How many times have you had five or more alcoholic drinks in a row?” (Bachman et al., 2010). Response options were “never” (84.9%), “once” (6.6%), “twice” (4.5%), “three to five times” (2.9%), “six to nine times” (0.6%), and “10 or more times” (0.5%). Responses to alcohol use items followed a negative binomial distribution.

Marijuana Use—Marijuana use was assessed with one item: “During the last 30 days, on how many occasions, or times, if any, have you used marijuana?” (Bachman et al., 2010). Response options were “never” (80.3%), “1–2 occasions” (6.7%), “3–5 occasions” (3.1%), “6–9 occasions” (1.6%), “10–19 occasions” (2.4%), “20–39 occasions” (2.0%), or “40 or more occasions” (4.0%). Responses followed a negative binomial distribution.

Physical Aggression—A 2-item scale assessed physical aggression (Komro et al., 2004): “During the last month, how many times have you...” “...pushed, shoved, pulled someone’s hair, or grabbed someone?” and “...kicked, hit, or beat up another person?”. Response options were 1= “never,” 2= “1–3 times,” and 3= “4 or more times.” Factor-score-weighted sums of these items were calculated to create the scale, which was normally distributed with a range of –0.69 to 2.93 and Cronbach’s alpha = 0.78.

Delinquency—A standardized six-item scale was used to describe delinquent behavior (Komro et al., 2004): “During the last month, how many times have you...” “...taken part in a fight where a group of your friends were against another group?”, “...stolen something from a store?”, “...cut or skipped school?”, “...gotten into serious trouble with your parent or guardian?”, “...gotten into trouble with the police?” and “...carried a weapon such as a gun, knife or club?”. Response options were 1= “never,” 2= “1–3 times,” and 3= “4 or more times.” Factor-score-weighted sums of these items were calculated to create the scale, which was normally distributed with a range of –0.68 to 6.07 and Cronbach’s alpha = 0.67.

Victimization—A standardized three-item scale measured victimization (Komro et al., 2004). Participants were asked: “During the last 12 months ...” “...has someone injured you on purpose?”, “... has someone threatened to injure you, but not actually injured you?”, and “...did your boyfriend or girlfriend ever hit, slap, or physically hurt you on purpose?”. Response options were: 1=“not at all,” 2=“once,” 3=“twice,” 4=“three or four times,” and 5=“five or more times.” Factor-score-weighted sums of these items were calculated to create the scale, which was normally distributed with a range of –0.59 to 5.13 and Cronbach’s alpha = 0.67.

Depression—A 6-item scale measured depression (Kandel and Davies, 1982): “During the last 12 months, how often have you been bothered or troubled by...” “...feeling too tired to do things,” “...having trouble going to sleep or staying asleep?”, “...feeling unhappy, sad, or depressed?”, “...feeling hopeless about the future?”, “...feeling nervous or tense?”, and “...worrying too much about things?”. Response options were 1= “not at all,” 2= “somewhat,” or 3= “much.” The scale was created following procedures outlined by Kandel and Davies (Kandel and Davies, 1982). It was normally distributed with a range of 10 to 30 and Cronbach’s alpha = 0.87.

Suicidal Ideation—Participants were asked: “During the last 12 months, did you ever seriously consider attempting suicide?” (Centers for Disease Control and Prevention, 2011).

Response options were: “not at all”, “once”, “twice”, “3 or 4 times”, “5 or more times.” Any participant who responded that they had seriously considered suicidal at least once in the last 12 months was coded as having suicidal ideation.

Sexual Behavior—The number of sexual partners was assessed by asking: “During your life, with how many people have you had sex (oral, vaginal or anal)?” (Centers for Disease Control and Prevention, 2011). Participants wrote-in the number of partners. Responses followed a negative binomial distribution (Mean = 3.41, SD = 7.75). Two items assessed the age at first vaginal/anal and oral sex (Centers for Disease Control and Prevention, 2011): “How old were you when you had...” “...vaginal or anal sex for the first time?” and “...oral sex for the first time?”. For analysis, response options were categorized as “never” (38.6% and 48.9%, respectively), “14 years old or older” (52.2% and 43.0%, respectively), and “13 years old or younger” (9.2% and 8.1% respectively) and were modeled using a multinomial distribution. Unprotected sex was assessed by asking (Centers for Disease Control and Prevention, 2011): “The last time you had sex, did you or your partner use a condom?” Response options were categorized as “I have never had sex” (34.8%), “Yes” (41.3%), and “No” (23.9%) and were modeled using a multinomial distribution.

Analysis

Regression analysis in SAS PROC GENMOD (SAS Institute Inc., 1999) was used to examine the influence of perceived racial/ethnic discrimination on related consequences among 17–18 year olds. PROC GENMOD allowed all models, with varied dependent variable distributions [i.e., Gaussian (physical aggression, delinquency, victimization, depression), binomial (suicidal ideation) negative binomial (alcohol use, marijuana use), multinomial (sexual behaviors)], to be estimated within one analytical framework. The proportional odds test revealed approximately equivalent differences between categories of sexual activities; thus, we modeled these outcomes with ordinal logistic regression. While the sample was drawn from elementary/middle schools participating in a group-randomized trial, we did not adjust for school-level clustering because we found no evidence of clustering of the outcome behaviors among 17–18 year olds by the sampled elementary/middle school attended (Intraclass correlation < 0.001). All models were estimated while controlling for race/ethnicity, gender, family structure [“mother and father together” was compared to “other”], receipt of free- or reduced-price lunch, whether the participant was born in the United States, and intervention condition. These variables were chosen *a priori* to control for potential confounding between the racial/ethnic discrimination and outcome measures. Based on recommendations to explore interactions of race and gender on the associations between discrimination and health (Pascoe and Richman, 2009, Williams and Mohammed, 2009), we examined interactions with race/ethnicity and gender for each model by including race/ethnicity*discrimination, gender*discrimination, and race/ethnicity*gender*discrimination interaction terms. Other moderators were not considered in these analyses.

Missing data patterns due to item non-response were examined for each model using PROC MI in SAS v9.2. Ten to 14.8 percent of participants had incomplete data across one or more of the modeled variables. As such, missingness was addressed through multiple imputation by sequential regression. All imputations were done through IVEware using SAS v9.2 following sequence procedures outlined by Raghunathan (Raghunathan et al., 2001). Five hundred total sequences were run, taking every 10th sequence, which resulted in 50 imputation datasets, which is considered adequate for this imputation method. Results from these 50 datasets were combined using PROC MIANALYZE in SAS v9.2. We report results including the imputations; however, their inclusion produced very little substantive change in observed associations.

RESULTS

Characteristics of the 2,490 adolescents that comprise the present sample are presented in Table 1.

Race/ethnicity and gender were not significant moderators of the associations between perceived racial/ethnic discrimination and any of the outcomes studied. Thus, results are presented for the combined sample. Twenty-seven percent of adolescents had never experienced racial/ethnic discrimination, 31% hardly ever experienced any racial/ethnic discrimination, 11% occasionally or often experienced racial/ethnic discrimination that was not very disturbing, 17% occasionally experienced racial/ethnic discrimination that was somewhat disturbing, and 14% occasionally or often experienced racial/ethnic discrimination that was somewhat or very disturbing.

Table 2 presents the associations between perceived racial/ethnic discrimination and problem behaviors and mental health among 17–18 year olds. Due to the variations in outcome variable distributions, 3 effect size metrics are reported—rate ratios (RR) for outcomes following a negative binomial distribution, Cohen's *d* (*d*) for normally distributed outcomes, and odds ratios (OR) for outcomes with binary or multinomial distributions.

Relative to those who reported never experiencing racial/ethnic discrimination, those who reported any racial/ethnic discrimination, at all frequencies and intensities, were at significantly increased risk for victimization and depression. More frequent racial/ethnic discrimination, at varying levels of intensity, was significantly associated with greater physical aggression, delinquency, suicidal ideation, younger age at first oral sex, unprotected sex during last vaginal/anal sex, and more lifetime sexual partners. Only those who reported occasionally or often experiencing racial/ethnic discrimination that was somewhat or very disturbing were at significantly increased risk for younger age of vaginal/anal sex. There were no significant associations between perceived racial/ethnic discrimination and substance use outcomes (i.e., past month and heavy episodic alcohol use, past month marijuana use).

DISCUSSION

Nearly three-quarters (73%) of adolescents in this urban, primarily minority sample had perceived racial/ethnic discrimination experiences. Forty-two percent of those experiences occurred “occasionally” or “often” and were “somewhat” or “very disturbing.” Our findings suggest that youth who experience racial/ethnic discrimination are at increased risk for a number of maladaptive outcomes, including physical aggression, delinquency, victimization, depression, suicidal ideation and risky sexual behavior, and that these associations do not vary by race/ethnicity or gender. It was somewhat surprising that race/ethnicity was not a significant moderator of the observed associations. Although a meta-analysis of studies examining racial/ethnic discrimination and health found that higher levels of perceived discrimination were related to poorer levels of mental health among all racial/ethnic groups and both genders (Pascoe and Richman, 2009), some studies have suggested that there are important differences in the relationship between discrimination and problem behaviors across race/ethnicity (Borrell et al., 2010, Zemore et al., 2011). The lack of differences observed in the present study may be related to youth living in communities and attending schools that are racially/ethnically heterogeneous. Thus, there are similarities in the frequency and intensity of racial/ethnic discrimination experiences and the relative meaning and/or influence of these experiences across race/ethnicities in this diverse sample are equivalent.

Examinations of dose-response patterns related to racial/ethnic discrimination and subsequent outcomes have largely been neglected in the extant literature, as few studies have considered both the frequency and subjective intensity of experiences (Pascoe and Richman, 2009, Williams and Mohammed, 2009). Findings from the present study suggest that both are important dimensions in understanding how racial/ethnic discrimination impacts psychological stress and subsequent engagement in high-risk behaviors and deleterious mental health outcomes, and that efforts to prevent racial/ethnic discrimination and improve adolescents' resilience to these distressful experiences are important. The literature suggests several targets for prevention, including improving engagement coping strategies (i.e., direct coping with the stressor or one's emotions), racial/ethnic socialization, and perceived social support (Brown, 2008, Edwards and Romero, 2008).

The lack of significant associations with substance use is contrary to much of the published literature (Borrell et al., 2010, Gee et al., 2007, Crengle et al., 2012); however, this literature reports inconsistent associations between perceived racial/ethnic discrimination and substance use. For example, Crengle (2012) found that ethnic discrimination among indigenous and minority adolescents in New Zealand was significantly associated with binge alcohol use, but not cigarette smoking. In the United States, Zeng (2011) found that racial/ethnic discrimination was not significantly associated with drinking behavior among Black and Latino adults, but was associated with alcohol dependence in Blacks and drinking-related consequences in Latinos. A study by Wiehe (2010) showed that racial/ethnic discrimination was associated with increased odds of smoking among Black and Latino adolescent boys, but decreased odds among girls. Although Bennett (2005) reported associations between racial/ethnic discrimination and tobacco use, the authors did not discuss associations with alcohol, marijuana, and other drug use measures assessed in their studies. Borrell (2007) found that racial/ethnic discrimination was related to lifetime marijuana use in Blacks, but was unrelated to marijuana use in the past 30 days. The relationship between racial/ethnic discrimination and substance use may depend on the measures assessed, the population, the substance, and other contextual factors.

Consistent with systematic reviews of discrimination-health studies (Paradies, 2006, Pascoe and Richman, 2009, Williams and Mohammed, 2009, Williams et al., 2003) and more recent research across countries and cultures (Moomal et al., 2009, Agudelo-Suárez et al., 2011, Chou, 2012, Bals et al., 2010), we found strong associations between perceived racial/ethnic discrimination and negative mental health outcomes, including depression and suicidal ideation. The magnitude of effects is notable, suggesting that the risk for depression among adolescents who have more frequent and disturbing experiences may be as much as 0.6 standard deviations higher than that for those who never experience racial/ethnic discrimination. Likewise, the risk for suicidal thoughts may be nearly 3 times greater among those who have more frequent and disturbing experiences compared to those without discriminatory experiences. Understanding depression and suicidal ideation among adolescents is particularly important because of the strong relationship with adulthood depression, anxiety disorder, multi-drug use, low educational attainment, interpersonal relationship problems, and poorer health (Bardone et al., 1996, Bardone et al., 1998).

Findings should be interpreted considering two limitations. First, data for this study were cross-sectional; thus, causal inferences cannot be made. There is a critical need in the literature to examine the mechanisms and processes by which racial/ethnic discrimination influences health outcomes and social behaviors. Second, data were from low-income, White, African American and Hispanic late-adolescent youth residing in inner-city Chicago. While findings may generalize to other low-income adolescents within Chicago and perhaps other similar cities, observed associations may not be generalizable to larger variations in cultures or context.

There are several important strengths. First, the literature examining effects of racial/ethnic discrimination has given little attention to younger populations as well as Hispanics. Our sample was exclusively adolescent youth and included a large number of low-income, racial/ethnic minority youth, 31% of which were Hispanic. Second, few studies have considered the perceived intensity of racial/ethnic discrimination experiences, in addition to their frequency. We utilized a composite measure reflecting both dimensions, and our findings suggest both are important in understanding the impact of experiencing racial/ethnic discrimination prior to adulthood. Finally, we were able to examine associations between racial/ethnic discrimination and an array of deleterious outcomes. Our findings suggest that perceived racial/ethnic discrimination may have significant effects on many deleterious behaviors and mental health outcomes that develop during adolescence and have important contributions to health and success throughout adulthood. Given that the vast majority of adolescents in this urban sample had experienced some kind of racial/ethnic discrimination, prevention and coping strategies are important targets for intervention.

References

- AGUDELO-SUÁREZ AA, RONDA-PÉREZ E, GIL-GONZÁLEZ D, VIVES-CASES C, GARCÍA A, RUIZ-FRUTOS C, FELT E, BENAVIDES FG. The effect of perceived discrimination on the health of immigrant workers in Spain. *BMC Public Health*. 2011; 11:1–9. [PubMed: 21199570]
- BACHMAN, JG.; JOHNSTON, LD.; O'MALLEY, PM. Monitoring the Future: Questionnaire Responses from the Nation's High School Seniors, 2010. Ann Arbor, MI: Institute for Social Research; 2010.
- BALS M, TURI AL, SKRE I, KVERNMO S. Internalization symptoms, perceived discrimination, and ethnic identity in indigenous Sami and non-Sami youth in Arctic Norway. *Ethnicity and Health*. 2010; 15:165–179.
- BARDONE AM, MOFFITT TE, CASPI A, DICKSON N, STANTON WR, SILVA PA. Adult mental health and social outcomes of adolescent girls with depression and conduct disorder. *Development and Psychopathology*. 1996; 8:811–829.
- BARDONE AM, MOFFITT TE, CASPI A, DICKSON N, STANTON WR, SILVA PA. Adult physical health outcomes of adolescent girls with conduct disorder, depression, and anxiety. *Journal of the American Academy of Child and Adolescent Psychiatry*. 1998; 37:594–601. [PubMed: 9628079]
- BASTOS JL, CELESTE RK, FAERSTEIN E, BARROS AJD. Racial discrimination and health: A systematic review of scales with a focus on their psychometric properties. *Social Science and Medicine*. 2010; 70:1091–1099. [PubMed: 20122772]
- BASTOS JL, FAERSTEIN E, CELESTE RK, BARROS AJD. Explicit discrimination and health: development and psychometric properties of an assessment instrument. *Revista de Saude Publica*. 2012; 46:269–U291. [PubMed: 22437857]
- BENNETT GG, WOLIN KY, ROBINSON EL, FOWLER S, EDWARDS CL. Perceived racial/ethnic harassment and tobacco use among African American young adults. *American Journal of Public Health*. 2005; 95:238–240. [PubMed: 15671457]
- BONILLA-SILVA E. Rethinking Racism: Toward a Structural Interpretation. *American Sociological Review*. 1997; 62:465–480.
- BORDERS A, LIANG CTH. Rumination Partially Mediates the Associations Between Perceived Ethnic Discrimination, Emotional Distress, and Aggression. *Cultural Diversity and Ethnic Minority Psychology*. 2011; 17:125–133. [PubMed: 21604836]
- BORRELL LN, DIEZ-ROUX AV, JACOBS DR, SHEA S, JACKSON SA, SHRAGER S, BLUMENTHAL RS. Perceived racial/ethnic discrimination, smoking and alcohol consumption in the Multi-Ethnic Study of Atherosclerosis (MESA). *Preventive Medicine*. 2010; 51:307–312. [PubMed: 20609433]
- BORRELL LN, JACOBS DR, WILLIAMS DR, PLETCHER MJ, HOUSTON TK, KIEFE CI. Self-reported Racial Discrimination and Substance Use in the Coronary Artery Risk Development in Adults Study. *American Journal of Epidemiology*. 2007; 166:1068–1079. [PubMed: 17698506]

- BROWN DL. African American Resiliency: Examining Racial Socialization and Social Support as Protective Factors. *Journal of Black Psychology*. 2008; 34:32–48.
- CARTER RT. Racism and Psychological and Emotional Injury: Recognizing and Assessing Race-Based Traumatic Stress. *The Counseling Psychologist*. 2007; 35:13–105.
- CENTERS FOR DISEASE CONTROL AND PREVENTION. [Accessed on November 9, 2011] 2011 National Youth Risk Behavior Survey. 2011. Available at <http://www.cdc.gov/yrbs>
- CHAE DH, NURU-JETER AM, LINCOLN KD, ARRIOLA KRJ. Racial Discrimination, Mood Disorders, and Cardiovascular Disease Among Black Americans. *Annals of Epidemiology*. 2012; 22:104–111. [PubMed: 22104740]
- CHAE DH, WALTERS KL. Racial Discrimination and Racial Identity Attitudes in Relation to Self-Rated Health and Physical Pain and Impairment Among Two-Spirit American Indians/Alaska Natives. *American Journal of Public Health*. 2009; 99:S144–S151. [PubMed: 19218182]
- CHOU KL. Perceived discrimination and depression among new migrants to Hong Kong: The moderating role of social support and neighborhood collective efficacy. *Journal of Affective Disorders*. 2012; 138:63–70. [PubMed: 22284018]
- COHEN, S.; KESSLER, RC.; UNDERWOOD-GORDON, L. Strategies for measuring stress in studies of psychiatric and physical disorders. In: COHEN, S.; KESSLER, RC.; UNDERWOOD-GORDON, L., editors. *Measuring Stress: A Guide for Health and Social Scientists*. New York: Oxford University Press; 1995.
- CRENGLE S, ROBINSON E, AMERATUNGA S, CLARK T, RAPHAEL D. Ethnic discrimination prevalence and associations with health outcomes: data from a nationally representative cross-sectional survey of secondary school students in New Zealand. *BMC Public Health*. 2012; 12:1–11. [PubMed: 22214479]
- EDWARDS LM, ROMERO AJ. Coping With Discrimination Among Mexican Descent Adolescents. *Hispanic Journal of Behavioral Sciences*. 2008; 30:24–39.
- FORD CL, DANIEL M, EARP JA, KAUFMAN JS, GOLIN CE, MILLER WC. Perceived Everyday Racism, Residential Segregation, and HIV Testing Among Patients at a Sexually Transmitted Disease Clinic. *American Journal of Public Health*. 2009; 99:S137–S143. [PubMed: 19218186]
- GEE GC, DELVA J, TAKEUCHI DT. Relationships Between Self-Reported Unfair Treatment and Prescription Medication Use, Illicit Drug Use, and Alcohol Dependence Among Filipino Americans. *American Journal of Public Health*. 2007; 97:933–940. [PubMed: 16809581]
- HARRIS R, CORMACK D, TOBIAS M, YEH LC, TALAMAIVAO N, MINSTER J, TIMUTIMU R. The pervasive effects of racism: Experiences of racial discrimination in New Zealand over time and associations with multiple health domains. *Social Science and Medicine*. 2012; 74:408–415. [PubMed: 22204840]
- KANDEL DB, DAVIES M. Epidemiology of Depressive Mood in Adolescents -an Empirical-Study. *Archives of General Psychiatry*. 1982; 39:1205–1212. [PubMed: 7125850]
- KOMRO KA, PERRY CL, MUNSON KA, STIGLER MH, FARBAKHS K. Reliability and validity of self-report measures to evaluate drug and violence prevention programs. *Journal of Child & Adolescent Substance Abuse*. 2004; 13:17–51.
- KOMRO KA, PERRY CL, VEBLEN-MORTENSON S, FARBAKHS K, TOOMEY TL, STIGLER MH, JONES-WEBB R, KUGLER KC, PASCH KE, WILLIAMS CL. Outcomes for a randomized controlled trial of a multi-component alcohol use preventive intervention for urban youth: Project Northland Chicago. *Addiction*. 2008; 103:606–618. [PubMed: 18261193]
- MARTIN JK, TUCH SA, ROMAN PM. Problem Drinking Patterns among African Americans: The Impacts of Reports of Discrimination, Perceptions of Prejudice, and “Risky” Coping Strategies. *Journal of Health and Social Behavior*. 2003; 44:408–425. [PubMed: 14582316]
- MARTIN MJ, MCCARTHY B, CONGER RD, GIBBONS FX, SIMONS RL, CUTRONA CE, BRODY GH. The Enduring Significance of Racism: Discrimination and Delinquency Among Black American Youth. *Journal of Research on Adolescence*. 2011; 21:662–676. [PubMed: 21941426]
- MOOMAL H, JACKSON PB, STEIN DJ, HERMAN A, MYER L, SEEDAT S, MADELA-MNTLA E, WILLIAMS DR. Perceived discrimination and mental health disorders: The South African Stress and Health study. *South African Medical Journal*. 2009; 99:383–389. [PubMed: 19588802]

- PARADIES Y. A systematic review of empirical research on self-reported racism and health. *International Journal of Epidemiology*. 2006; 35:888–901. [PubMed: 16585055]
- PASCOE EA, RICHMAN LS. Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin*. 2009; 135:531–554. [PubMed: 19586161]
- PERVANIDOU P, CHROUSOS GP. Metabolic consequences of stress during childhood and adolescence. *Metabolism: Clinical and Experimental*. 2012; 61:611–619. [PubMed: 22146091]
- RAGHUNATHAN TE, LEPKOWSKI JM, VAN HOEWYK J, SOLENBERGER P. A Multivariate Technique for Multiply Imputing Missing Values Using a Sequence of Regression Models. *Survey Methodology*. 2001; 27:85–95.
- SAS INSTITUTE INC. SAS/STAT User's Guide, Version 8. Cary, NC: SAS Institute, Inc; 1999. Chapter 29: The GENMOD Procedure.
- SINHA R. How does stress increase risk of drug abuse and relapse? *Psychopharmacology*. 2001; 158:343–359. [PubMed: 11797055]
- STUEVE A, O'DONNELL L. Urban Young Women's Experiences of Discrimination and Community Violence and Intimate Partner Violence. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*. 2008; 85:386–401. [PubMed: 18347993]
- TOBLER AL, KOMRO KA. Contemporary options for longitudinal follow-up: Lessons learned from a cohort of urban adolescents. *Evaluation and Program Planning*. 2011; 34:87–96. [PubMed: 21338843]
- WIEHE SE, AALSMA MC, LIU GC, FORTENBERRY JD. Gender Differences in the Association Between Perceived Discrimination and Adolescent Smoking. *American Journal of Public Health*. 2010; 100:510–516. [PubMed: 20075313]
- WILLIAMS DR. Race, Socioeconomic Status, and Health. The Added Effects of Racism and Discrimination. *Annals of the New York Academy of Sciences*. 1999; 896:173–188. [PubMed: 10681897]
- WILLIAMS DR, MOHAMMED SA. Discrimination and racial disparities in health: evidence and needed research. *Journal of Behavioral Medicine*. 2009; 32:20–47. [PubMed: 19030981]
- WILLIAMS DR, NEIGHBORS HW, JACKSON JS. Racial/Ethnic Discrimination and Health: Findings From Community Studies. *American Journal of Public Health*. 2003; 93:200–208. [PubMed: 12554570]
- ZEMORE SE, KARRIKER-JAFFE KJ, KEITHLY S, MULIA N. Racial prejudice and unfair treatment: interactive effects with poverty and foreign nativity on problem drinking. *Journal of Studies on Alcohol and Drugs*. 2011; 72:361–370. [PubMed: 21513672]

KEY MESSAGES

Among a large sample of adolescents living in inner-city Chicago (United States), most adolescents (73%) experienced discrimination due to their race/ethnicity. Forty-two percent of experiences were “somewhat-” or “very disturbing.” Adolescents who experienced racial/ethnic discrimination were more likely to report greater physical aggression, delinquency, suicidal ideation, younger age at first oral sex, unprotected sex during last intercourse, and more lifetime sexual partners. Experiences of racial/ethnic discrimination contribute to maladaptive behavioral and mental health outcomes among adolescents.

TABLE 1

Sample characteristics.

Characteristic	Mean (SD)/Percentage
Age	18.1 (0.64)
Race/Ethnicity ^a	
African American	51.0%
Hispanic	31.4%
White	17.8%
Boys	44.6%
Low Socio-economic Status	79.0%
Lives with mother and father together	38.1%
Born in the U.S.	87.0%
Intervention condition	45.0%

^aRace/Ethnicity was assessed with two items: "Are you Hispanic or Latino?" and "What is your race?" Participants were asked to mark all that describe them. Responses to the ethnicity question were dichotomized to reflect "No, I am not Hispanic or Latino" and a selection of one or more of "Mexican, Mexican American or Chicano," "Cuban or Cuban American," "Puerto Rican," or "Other Hispanic or Latino." Responses to the race question included "Asian or Asian Indian," "Black or African American," "Native American or American Indian," "Native Hawaiian or Other Pacific Islander," "White," and "Other." Only those who identified themselves as African American, White or Hispanic were included in the present study.

TABLE 2

Perceived frequency and intensity of racial/ethnic discrimination and problem behaviors among 17–18 year old Chicago youth, 2008–2009

	Effect Size	95% CI	
	<i>RRⁱ</i>	LCL	UCL
Alcohol Use, Past Month^a			
Hardly ever experience any discrimination	0.99	0.89	1.09
Occasionally or often, not very disturbing	1.06	0.94	1.17
Occasionally, somewhat disturbing	1.04	0.91	1.17
Occasionally or often, somewhat or very disturbing	1.08	0.96	1.19
Heavy Episodic Alcohol Use^a			
Hardly ever experience any discrimination	0.94	0.85	1.04
Occasionally or often, not very disturbing	1.03	0.91	1.15
Occasionally, somewhat disturbing	1.05	0.91	1.19
Occasionally or often, somewhat or very disturbing	1.06	0.94	1.19
Marijuana Use, Past Month^a			
Hardly ever experience any discrimination	0.99	0.90	1.08
Occasionally or often, not very disturbing	0.96	0.86	1.07
Occasionally, somewhat disturbing	1.10	0.98	1.23
Occasionally or often, somewhat or very disturbing	1.06	0.95	1.18
Physical Aggression, Past Month^b			
	<i>dⁱ</i>	LCL	UCL
Hardly ever experience any discrimination	0.07	−0.04	0.17
Occasionally or often, not very disturbing	0.14*	0.02	0.26
Occasionally, somewhat disturbing	0.30***	0.15	0.44
Occasionally or often, somewhat or very disturbing	0.33***	0.20	0.46
Delinquency, Past Month^c			
Hardly ever experience any discrimination	0.05	−0.05	0.16
Occasionally or often, not very disturbing	0.12	−0.01	0.25
Occasionally, somewhat disturbing	0.20**	0.05	0.35
Occasionally or often, somewhat or very disturbing	0.30***	0.16	0.43
Victimization, Past Year^d			
Hardly ever experience any discrimination	0.15**	0.05	0.25
Occasionally or often, not very disturbing	0.30***	0.17	0.42
Occasionally, somewhat disturbing	0.36***	0.21	0.50
Occasionally or often, somewhat or very disturbing	0.53***	0.40	0.66
Depression, Past Year^e			
Hardly ever experience any discrimination	0.24***	0.14	0.35
Occasionally or often, not very disturbing	0.40***	0.28	0.52
Occasionally, somewhat disturbing	0.38***	0.24	0.52

	Effect Size	95% CI	
	<i>RRⁱ</i>	LCL	UCL
Alcohol Use, Past Month^a			
Occasionally or often, somewhat or very disturbing	0.56***	0.43	0.69
Suicidal Ideation, Past Year^f			
	<i>ORⁱ</i>	LCL	UCL
Hardly ever experience any discrimination	1.47	0.96	1.98
Occasionally or often, not very disturbing	1.79*	1.09	2.50
Occasionally, somewhat disturbing	1.32	0.69	1.95
Occasionally or often, somewhat or very disturbing	2.65**	1.63	3.67
Age at First Vaginal/Anal Sex^g			
Hardly ever experience any discrimination	1.07	0.84	1.29
Occasionally or often, not very disturbing	1.22	0.91	1.52
Occasionally, somewhat disturbing	1.33	0.94	1.71
Occasionally or often, somewhat or very disturbing	1.44*	1.06	1.82
Age at First Oral Sex^g			
Hardly ever experience any discrimination	1.18	0.93	1.44
Occasionally or often, not very disturbing	1.40*	1.05	1.75
Occasionally, somewhat disturbing	1.48*	1.06	1.91
Occasionally or often, somewhat or very disturbing	1.47*	1.08	1.86
Condom Use, Last Time Had Sex^h			
Hardly ever experience any discrimination	1.29*	1.02	1.56
Occasionally or often, not very disturbing	1.29	0.96	1.62
Occasionally, somewhat disturbing	1.49*	1.07	1.91
Occasionally or often, somewhat or very disturbing	1.60**	1.17	2.02
Number of Sexual Partners, Lifetime^d			
	<i>RRⁱ</i>	LCL	UCL
Hardly ever experience any discrimination	1.06	0.97	1.16
Occasionally or often, not very disturbing	1.13*	1.02	1.23
Occasionally, somewhat disturbing	1.38***	1.25	1.51
Occasionally or often, somewhat or very disturbing	1.47***	1.34	1.59

Note. In all analyses, “never experienced discrimination” was the referent group. All analyses controlled for gender, race/ethnicity, family composition, intervention condition, country of birth, and receipt of free- or reduced-price lunch.

^a Modeled under a negative binomial distribution.

^b Higher scores on this scale indicated more aggression; Range: −0.69 to 2.93.

^c Higher scores on this scale indicated more delinquency; Range: −0.68 to 6.07.

^d Higher scores on this scale indicated more victimization; Range: −0.59 to 5.13.

^e Higher scores on this scale indicated more depression; Range: 10.0 to 30.0.

^f Participants who never had thoughts about suicide were the referent group.

^gModeled under a multinomial distribution; “Never had sex” was the referent group. The odds ratio reflects the odds of moving up into a riskier category (i.e., “Never had sex” to “age 14 or older” to “age 13 or younger”).

^hModeled under a multinomial distribution; “Never had sex” was the referent group. The odds ratio reflects the odds of moving up into a riskier category (i.e., “Never had sex” to “used a condom during last sex” to “did not use a condom during last sex”).

ⁱRR=rate ratio; *d*=Cohen’s *d*; OR=odds ratio.

*
p<.05;

**
p<.01;

p<.001