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Relationship between Perceived Discrimination and Sedentary Behavior in Adults

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Human Subjects Statement

The Coronary Artery Risk Development on Young Adults (CARDIA) study was approved by the institutional review boards at all study sites including: Northwestern University, University of Alabama at Birmingham, University of Minnesota, and Kaiser Permanente.

Conflict of Interest Statement

The authors of this paper have no interest to disclose.

Abstract

Objective—To identify psychosocial factors associated with sedentary behavior, we tested whether perceived discrimination is associated with sedentary behavior.

Methods—Black and white men and women (N = 3270) from the Coronary Artery Risk Development in Young Adults (CARDIA) Study reported experiences of discrimination and time engaged in total and screen time sedentary behaviors in 2010–11.

Results—There were no associations of discriminatory experiences with total sedentary behavior time. However, discriminatory experiences were positively associated with screen time for black men (OR 1.81, 95% CI: 1.14, 2.86) and white women (OR 1.51, 95% CI: 1.14, 2.00) after adjusting for demographic and traditional cardiovascular disease risk factors.

Conclusion—Among black men and white women, discriminatory experiences were correlated with more screen time sedentary behavior.

Keywords

sedentary behaviors; discrimination; stress

Sedentary behavior has emerged as an important target of health promotion and obesity prevention efforts¹ due to its direct association with obesity^{2–7} and other risk factors that diminish cardiovascular health.^{8–14} Sedentary behaviors such as watching television, using a computer, reading, and “sitting and socializing” are associated with higher body mass index independent of physical activity.^{1,8,10}

Psychological factors such as depression have been associated with sedentary behaviors.^{4,15,16} However, to our knowledge, the relationship between discrimination and sedentary behaviors has not been explored. Routine discriminatory experiences can become a chronic stressor that erodes an individual’s protective resources and increases vulnerability to physical illness.^{17,18} Discriminatory experiences can produce significantly heightened psychological and physiological stress responses¹⁸ and are related to unhealthy behaviors including cigarette smoking,¹⁹ alcohol dependence,²⁰ and both prescription and illicit drug use.^{21,22} Discrimination also has been associated with health outcomes including self-rated health, hypertension, and atherosclerotic disease.²³ According to the social cognitive theory and the tenets of self-efficacy, if individuals do not believe that they can control aversive events, like discriminatory experiences, they may distress themselves and subsequently impair their level of functioning.²⁴ Pascoe and Smart²⁵ suggest that discriminatory experiences may lead to increased participation in unhealthy behaviors as a way of escaping the negative affect and cognition that perceptions of discrimination may arouse.

Whereas prior studies have investigated the association of psychosocial factors and physical activity,^{26,27} few have investigated these factors in relation to sedentary behaviors. Such an association is plausible because perceived discrimination has been associated with the previously mentioned health behaviors,^{19–22} as well as depressive symptoms,^{4,15,16,28–32} an established predictor of sedentary behavior. It is particularly important to assess the association between discriminatory experiences and sedentary behavior in a sample of black

and white men and women because the rates of sedentary behavior and reporting of discriminatory experiences varies according to these characteristics and the association between the 2 may vary by race and sex.

The objective of this study was to examine associations of self-reported discriminatory experiences with sedentary behaviors in a bi-racial sample of men and women. We hypothesized that discriminatory experiences are positively associated with sedentary behavior. Screen time was explored separately to improve understanding of these increasingly common modifiable sedentary behaviors so that potential interventions can be targeted towards at-risk populations. Answering this question is important because identifying a psychosocial determinant of sedentary behavior may help researchers explore various methods to decrease this modifiable cardiovascular risk factor. Findings from our study can be used to assess the psychosocial mechanisms of sedentary behavior and the development of behavioral interventions targeting sedentary behavior.

METHODS

Participants

The Coronary Artery Risk Development in Young Adults (CARDIA) study is a multicenter, longitudinal investigation of cardiovascular disease risk starting in young adulthood. The study began in 1985–86 with 5115 black and white adults between the ages of 18 and 30. Participants were recruited from 4 metropolitan areas (Birmingham, AL; Chicago, IL; Minneapolis, MN; and Oakland, CA). Blacks and whites were included in the study because they were the 2 largest racial groups in the United States when the cohort was formed in 1985 and because a substantial disparity in health behaviors and health outcomes exist between the groups. Participants eligible for the current study ($N = 3308$) were examined at the year 25 follow-up examination (2010–11). After excluding participants missing sedentary behavior or discriminatory experiences data ($N = 21$), women who were pregnant ($N = 3$), persons reporting sedentary behavior in excess of 24 hours/day ($N = 13$), persons with a sex change ($N = 1$), or persons missing covariates of interest ($N = 168$), there were 3270 participants for analyses.

Measures

Discriminatory experiences—Discriminatory experiences were assessed with the Experiences of Discrimination Questionnaire.²⁰ The questionnaire includes 4 subscales: sex, race or color, socioeconomic position, and weight. Participants were asked if they had experienced discrimination in 7 different situations (Y/N) for each subscale. If they responded yes to any of the 7 questions on any of the 4 discrimination subscales, they were classified as having experienced discrimination. This dichotomous total score was used to assess the main effect of discriminatory experiences on sedentary behavior. The Cronbach reliability coefficients for the 4 subscales ranged from 0.78 to 0.82 in the current sample.

Sedentary behavior—The sedentary behavior questionnaire was adapted from questionnaires used in children and adolescents^{33,34} and was designed to collect information about daily time spent engaged in sedentary activities. The survey was selected because it

provided the most comprehensive assessment of sedentary behavior that were hypothesized to be relevant to our sample and to the health outcomes under study. The questionnaire was adapted to be relevant to adults. The sedentary activities included: “sitting while watching television,” “sitting while using the computer for non-work activities or playing video games,” “sitting listening to music, or reading a book, or magazine, or doing arts and crafts,” “sitting and talking on the phone or texting,” and “sitting or riding in a car, train, bus, or other mode of transportation.” Participants reported usual weekday and weekend behavior separately. The questions required a response on a 9-point scale: *None, 15 minutes or less, 30 minutes, 1 hour, 2 hours, 3 hours, 4 hours, 5 hours, 6 hours or more*. Responses were assessed by converting categorical responses to number of minutes that an individual reported engaging in the activity. The “6 hours or more response” was converted to 360 minutes. For the current analysis, total sedentary time was calculated as the daily average of all 6 sedentary activities weighted by whether they occurred on a weekend or weekday. The total sedentary behavior score was categorized as “low” if it was below the 75th percentile (< 8.5 hours/day) and “high” if it was above the 75th percentile of total sedentary behavior scores (> 8.5 hours/day). Sedentary screen time was calculated as a weighted daily average of reported weekday and weekend time spent watching television or using a computer for non-work related activities. The screen time behavior score was categorized as “low” if it was lower than 2 hours a day (30.5% of participants) and “high” if it was 2 hours a day or higher (69.5% of participants).³⁵ The total and screen time sedentary behavior cut-off points were not race-specific.

Covariates—The covariates were selected because they were considered conceptually-related to either discriminatory experiences or sedentary behavior. Questionnaires were used to assess achieved education (years), work status (“employed full-time” vs “other”), substance use (“yes” to ever using non-medical drugs), smoking status (“never” vs “former” vs “current”) and alcohol intake (“none” vs “<2 drinks for men/<1 drink for women” vs “>=2 drinks for men/>=1 drink for women”). Body mass index was calculated as measured weight (kg) divided by height (m²). Physical activity was assessed by an interviewer-administered questionnaire, which assessed the amount of time spent in 13 different activities of either heavy (> 5 metabolic equivalents (METs)) or moderate (3 to 4 METs) intensity during the last year.³⁶ A medical history questionnaire was used to quantify self-reported heart disease or antidepressant medication use. This questionnaire also was used to assess whether the participant had medical problems that interfered with their ability to exercise. Depressive symptoms were assessed by the Center for Epidemiologic Studies Depression Scale (CES-D); scores higher than 16 indicated high depressive symptoms.³⁷

Data Analysis

Analyses revealed no interaction between sex and race for the association of discriminatory experiences on sedentary activity. However, discriminatory experience and sedentary activity scores varied significantly between black and white men and women, thereby prompting stratification of all analyses by race and sex. Sample characteristics are presented using means for continuous variables and proportions for categorical variables. Multivariable-adjusted logistic regression analysis was used to examine associations of discriminatory experiences with sedentary behaviors; odds ratios and 95% confidence

intervals are used to describe the likelihood of being sedentary comparing participants who had experienced discrimination vs those who did not. We first examined unadjusted bivariate associations, then multivariable models including adjustment for demographic characteristics (age, education, employment, study site). Next, we added adjustment for coronary heart disease, depressive symptoms, antidepressants, body mass index, smoking status, alcohol intake, physical activity, and substance use. Statistical significance was determined at $p < .05$. Version 9.3 of the SAS software package (SAS Institute, Cary, NC, USA) was used for all analyses.

RESULTS

Sample Characteristics

The sample included black men (18.5%), white men (25.3%), black women (27.5%), and white women (28.7%). The mean age of all participants was 50 years, average education attained was 15 years, and 66% of participants worked full time. Characteristics of the study participants by race/sex category are shown in Table 1 by means (SD) and percentages (IQR). Compared with the rest of the sample, black women had higher body mass index (33.3 kg/m²), and lower physical activity scores (228). A higher proportion of black women reported high depressive symptoms (24.0%) and discriminatory experiences (70.4%) than other race-sex groups. White men were the least likely (29.6%) to report discriminatory experiences. This pattern also was found among the discrimination score types, with the exception of racial discrimination where black men reported the highest score (3.4) and socioeconomic position where black men and black women are both at 1.7. Black men and black women spent a similar amount of time engaging in total (36.8%; 40.7%) and screen time (81.7%; 79.4%) sedentary behaviors respectively (Table 2). The total and screen time sedentary behavior percentages were significantly different across 4 race/sex groups.

Discriminatory Experiences and Sedentary Behavior

Table 3 presents the association between discriminatory experiences and time spent engaging in sedentary behaviors. Discriminatory experiences were not associated with total sedentary behavior in the crude analyses or after adjusting for demographic, physiological, and behavioral variables. However, black men (OR 1.81, 95% CI: 1.14, 2.86) and white women (OR 1.51, 95% CI: 1.14, 2.00) who reported discriminatory experiences were more likely to spend time engaging in screen time than individuals who did not report discriminatory experiences. A subsequent sensitivity analysis revealed that these associations did not change when the discriminatory experiences score excluded weight discrimination (See Appendix). It appears that “sitting while using the computer for non-work activities” is driving the discriminatory experiences and screen time sedentary behavior association in white women while “sitting while watching television” is driving the association in black men (Table 4).

DISCUSSION

To our knowledge, this is the first study to examine associations between perceived discriminatory experiences and sedentary behavior. Discriminatory experiences were

positively associated with screen time in black men and white women, but not associated with total daily sedentary activity.

We found that just as discriminatory experiences are associated with cigarette smoking,¹⁹ alcohol dependence,²⁰ and drug use,^{21,22} they also may be associated with screen time sedentary behaviors in black men and white women. These results provide support for the model which posits that discrimination is a social stressor that may influence participation in unhealthy behaviors.¹⁸ Additionally, these findings are consistent with results from previous studies in which black adults spent more time engaging in sedentary behavior than white adults,^{4,38,39} but extend beyond those studies to highlight a potential explanation, particularly for black men. We did not find an association between discriminatory experiences and total sedentary behavior for any of the subgroups. This finding may suggest that the activities that were not screen time sedentary behaviors (ie, sitting while in a car, talking on the phone, or reading a book) were not selected as coping behaviors for discriminatory experiences.

Discrimination may be adversely associated with sedentary behaviors, like television watching and non-work related computer use, due to the mutual relationship that each of these factors has with depression.^{4,15,16,28,29} Negative interpersonal events like discrimination, stigmatization, and ostracism also can threaten an individual's goal to be valued and accepted by other people.²⁵ One behavioral response to perceived rejection is impaired self-regulation. Experimental studies show that rejection may lower an individual's motivation to comply with behavioral recommendations, particularly when doing so requires them to resist their immediate impulses (eg, choosing healthy snacks and beverages).^{40,41} Decreased motivation may explain the association of discrimination on sedentary behaviors. The association of discrimination on sedentary behavior also may exist because the individuals who perceive discrimination may want to avoid rejection or ostracism by staying at home and participating in leisure activities in a non-threatening environment.

There were also sex- and race-specific differences in discrimination's association with sedentary behavior. Discriminatory experiences were positively associated with screen time sedentary behavior for black men and white women, but not white men and black women, despite the finding that black women had relatively high discriminatory experience scores. It is possible that overall sedentary behavior was so high in black women, that there was minimal variability by discriminatory experiences. These findings also may suggest that black women did not choose to cope with discrimination by engaging in sedentary behaviors. Previous research suggests that black women may cope with discrimination through social support.⁴² Investigating whether black women are engaging in these sedentary activities by themselves or with other people may show that an association between discrimination and sedentary behaviors exists in this group.

A decomposition of discriminatory experiences' association with screen time sedentary behavior revealed that discriminatory experiences were related to "sitting while watching television" for black men and "sitting while using the computer" for white women. These behaviors may reflect use of the television or the Internet as coping mechanisms. Interestingly, these 2 subgroups preferred different types of sedentary behaviors when they

experienced discrimination. Future studies should investigate whether screen time sedentary behavior is motivated by the need for social support or the need for a distraction and mental disengagement. Screen time sedentary behavior is modifiable, unlike time spent driving, and so could serve as a target for future interventions.

One limitation of this research is that the discriminatory experiences scale did not assess all possible sources of discrimination. For example, discrimination based on sexual orientation or physical/mental disabilities was not assessed. Additionally, the measure did not consider engagement in work-related sedentary activities as one of the sedentary behaviors. Another limitation of this research is that we cannot determine the causal association between discriminatory experiences' and sedentary behaviors due to the cross-sectional design of the study and because of incomplete assessment of all possible covariates that could fall in the causal pathway between discriminatory experiences and sedentary behavior. Reverse causality is a plausible explanation for any observed association between weight discrimination and sedentary activities. We also were unable to quantify the total amount of time spent in sedentary behaviors directly because the sedentary behavior responses were categorical. Further, we were unable to identify the specific psychological processes that may relate discriminatory experiences with sedentary behavior because our secondary analysis study was not designed to address this question. We have captured one potential process, depressive symptoms, and find adjustment for depressive symptoms, our findings persist. Future research should include factors, such as motivation and self-efficacy, which could explain the pathway by which discriminatory experiences and screen time sedentary behaviors are associated. Forthcoming research also should assess sedentary behavior as a continuous variable in an effort to increase the power of the association between discriminatory experiences and sedentary behavior.

Findings from the current research study suggest that an individual's perception of discriminatory experiences may be a correlate of sedentary behavior, particularly among white women and black men. Replication of these analyses in other study samples would provide important information about whether the sex- and race-specific findings in this study extend to other settings. Future research should investigate the potential mediators (depression, neighborhood socioeconomic factors, etc.) of the discrimination-sedentary behavior relationship. Due to the high amount of time that the black participants spent sedentary compared to the white participants, as well as the lack of an association of discriminatory experiences on total sedentary behaviors among black women, additional research on other potential correlates of sedentary behavior among black adults is needed in an effort to decrease this adverse health behavior in the population.

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Appendix. Association of Sedentary Behaviors with Discriminatory Experience (without Weight), Stratified by Race and Sex (N = 3270)

	Black Men OR (CI)	White Men OR (CI)	Black Women OR (CI)	White Women OR (CI)
Sedentary behavior total				
M1: Unadjusted	1.33(0.93,1.92)	0.74(0.47,1.18)	0.81(0.61,1.07)	1.16(0.78,1.72)
M2	1.37(0.94,2.00)	0.68(0.42,1.10)	0.83(0.62,1.12)	1.29(0.86,1.93)
M3	1.47(1.00,2.16)	0.68(0.42,1.12)	0.78(0.58,1.06)	1.20(0.79,1.83)
Screen time sedentary behavior				
M1: Unadjusted	1.83(1.20,2.79)	1.16(0.83,1.61)	0.86(0.60,1.22)	1.27(0.98,1.65)
M2:	1.65(1.06,2.57)	1.10(0.78,1.55)	0.85(0.59,1.22)	1.42(1.09,1.86)
M3:	1.73(1.10,2.74)	1.19(0.83,1.70)	0.84(0.57,1.22)	1.40(1.06,1.85)

Note.

Data shown are odds ratios and 95% confidence intervals. Discrimination included experiencing any gender/race/SES/weight discriminations.

M2 Adjusted for age, education, employment, and study center

M3 M2 + coronary heart disease, total physical activity, body mass index, alcohol use, smoking status, medical problems interfering with exercise, substance use, depression (CES-D ≥ 16 vs. not depressed), and antidepressant use.

Table 1

Year 25 Characteristics of CARDIA Participants (N = 3270)

Characteristics	Black Men (N = 606)	White Men (N = 828)	Black Women (N = 899)	White Women (N = 937)
Age in years	49.4(3.8)	50.6(3.4)	49.6 (3.8)	50.8(3.4)
Education attained in years	13.9(2.4)	15.9(2.7)	14.3(2.4)	16.0(2.5)
Working Full Time, %	64.7	78.6	62.3	59.3
BMI, kg/m ²	30.5(6.8)	28.8(5.0)	33.3(7.9)	28.0(7.2)
Physical activity, exercise unit (y) ^a	373(159, 532)	359(224, 583)	253(63, 316)	334(146, 480)
Heart disease (%)	8.4	11.0	13.4	14.5
Substance use (%)	72.8	76.8	57.8	77.4
Smoking (%)				
Never	58.1	64.0	64.5	59.8
Former	15.7	23.3	16.8	28.8
Current	26.2	12.7	18.7	11.4
Alcohol use (%)				
None	28.7	14.8	31.7	12.7
Moderate	44.2	53.7	51.1	57.2
Heavy	27.1	31.6	17.2	30.1
Depression, CES-D score 16 (%)	15.4	12.4	24.0	13.7
Antidepressant use (%)	4.5	9.7	13.8	16.9
Medical Problem T=that interferes with ability to exercise (%)	11.1	19.8	14.7	24.7
Any discrimination experience ^b (%)	69.6	29.6	70.4	52.9
Discrimination summary score				
Gender discrimination	2.1(3.4)	0.3(1.1)	2.4(3.5)	1.5(2.6)
Racial discrimination	3.4(3.9)	0.3(0.9)	3.1(3.9)	0.4(1.4)
Socioeconomic position discrimination	1.7(3.2)	0.4(1.3)	1.7(3.3)	0.6(1.7)
Weight discrimination	0.6(2.0)	0.3(1.3)	1.0(2.6)	0.8(2.2)

Note.

Values are presented as percentages, means (SD), and medians (IQR). Substance use defined as non-medical drug use including: marijuana, cocaine, crack, amphetamines, methamphetamines, heroine, or prescription pain medicine for non-medical reasons. Alcohol use ("None" was defined as no alcoholic beverages in the past year; "Heavy" was defined as >14 drinks/week or >4 drinks on the day they drank the most in the past month for men; and > 7 drinks/week or > 3 drinks on the day they drank the most in the past month for women).

^aThe median (SD) are presented for the physical activity intensity score because the data is skewed; all other continuous variables are presented as means (SD).

^bDiscrimination was defined as experiencing any gender/race/SES/weight discriminations.

Table 2

Year 25 Outcome Variables of CARDIA Participants (N = 3270)

Characteristics	Black Men (N = 606)	White Men (N = 828)	Black Women (N = 899)	White Women (N = 937)
Total sedentary behavior, %				
Low (< 75 th percentile)	63.2	88.0	59.3	88.1
High(\geq 75 th percentile)	36.8	15.0	40.7	12.0
Screen time sedentary behavior, %				
Low (< 2 hours)	18.3	35.6	20.6	43.2
High(\geq 2 hours)	81.7	64.4	79.4	56.8

Note.

Values are presented as means (SD). Sedentary behaviors included TV viewing, computer/internet for leisure, sitting and doing non-work related paperwork, reading, sitting and talking/texting on phone, and driving/riding in a car. Sedentary behavior screen time includes TV viewing and computer/internet for leisure.

Table 3

Association of Sedentary Behaviors with Discriminatory Experience, Stratified by Race and Sex (N = 3270)

	Black Men OR (CI)	White Men OR (CI)	Black Women OR (CI)	White Women OR (CI)
Sedentary behavior total				
M1: Unadjusted	1.26(0.88,1.81)	0.84(0.55,1.29)	0.83(0.62,1.10)	1.43(0.96,2.15)
M2	1.29(0.88,1.88)	0.79(0.51,1.24)	0.85(0.63,1.15)	1.54(1.03,2.32)
M3	1.36(0.92,2.01)	0.74(0.47,1.17)	0.80(0.58,1.09)	1.25(0.81,1.93)
Screen time sedentary behavior				
M1: Unadjusted	1.92(1.26,2.94)	1.24(0.90,1.70)	0.94(0.66,1.35)	1.53(1.18,1.99)
M2:	1.74(1.12,2.71)	1.20(0.87,1.66)	0.94(0.65,1.36)	1.67(1.28,2.19)
M3:	1.81(1.14,2.86)	1.16(0.82,1.63)	0.91(0.62,1.33)	1.51(1.14,2.00)

Note.

Data shown are odds ratios and 95% confidence intervals. Discrimination included experiencing any gender/race/SES/weight discriminations.

M2: Adjusted for age, education, employment, and study center; M3: M2 + coronary heart disease, total physical activity, body mass index, alcohol use, smoking status, medical problems interfering with exercise, substance use, depression (CES-D ≥ 16 vs. not depressed), and antidepressant use.

Table 4
 Association of Sedentary Behavior Types with Discriminatory Experience, Stratified by Race and Sex (N = 3270)

	Watching TV, videos (β) (SE)	Using computer for non- work act. (β) (SE)	Doing paperwork not related to office work (β) (SE)	Listening to music, reading (β) (SE)	Talking on the phone, texting (β) (SE)	Driving, riding in car/ train/bus (β) (SE)
Overall						
M1: Unadjusted	0.30(0.05)**	0.14(0.04)**	0.07(0.03)**	0.08(0.04)*	0.14(0.03)**	0.23(0.04)**
M2	0.13(0.05)**	0.07(0.05)	-0.00(0.03)	-0.04(0.04)	0.01(0.03)	0.19(0.04)**
M3	0.09(0.05) ⁺	0.04(0.05)	-0.01(0.03)	-0.06(0.04)	-0.01(0.03)	0.19(0.04)**
Black men						
M1: Unadjusted	0.20(0.14)	0.04(0.11)	0.09(0.07)	-0.12(0.11)	0.17(0.09)	0.24(0.13) ⁺
M2:	0.25(0.14) ⁺	-0.07(0.11)	0.04(0.07)	-0.12(0.11)	0.22(0.09)*	0.32(0.13)**
M3:	0.24(0.14) ⁺	-0.05(0.12)	0.06(0.08)	-0.10(0.11)	0.27(0.09)**	0.34(0.14)**
White men						
M1: Unadjusted	0.01(0.09)	0.06(0.09)	0.07(0.05)	0.07(0.06)	-0.05(0.05)	0.06(0.07)
M2	-0.02(0.09)	0.02(0.09)	0.08(0.05)	0.05(0.06)	-0.04(0.05)	0.09(0.07)
M3	-0.05(0.09)	-0.02(0.09)	0.06(0.06)	0.03(0.06)	-0.05(0.05)	0.09(0.07)
Black women						
M1: Unadjusted	-0.13(0.11)	0.06(0.11)	-0.10(0.07)	-0.07(0.09)	-0.09(0.09)	0.30(0.09)**
M2	-0.06(0.11)	-0.00(0.11)	-0.12(0.07) ⁺	-0.06(0.09)	-0.02(0.09)	0.31(0.09)**
M3	-0.09(0.11)	-0.05(0.11)	-0.13(0.07) ⁺	-0.08(0.09)	-0.06(0.09)	0.30(0.09)**
White women						
M1: Unadjusted	0.18(0.08)*	0.24(0.07)**	0.02(0.04)	-0.07(0.05)	0.02(0.04)	0.09(0.05) ⁺
M2	0.26(0.08)**	0.23(0.07)**	0.03(0.04)	-0.07(0.05)	0.04(0.04)	0.10(0.05)*
M3	0.14(0.08) ⁺	0.19(0.07)**	0.02(0.04)	-0.08(0.06)	0.00(0.04)	0.09(0.05) ⁺

⁺ p < .10;

* p < .05;

** p < .01

Note.

Data shown are means (SD) or adjusted means (SE). Discrimination included experiencing any gender/race/SES/weight discriminations.

M2: Adjusted for age, education, and study center; M3: M2 + coronary heart disease, total physical activity, body mass index, alcohol use, smoking status, substance use, depression (CES-D ≥ 16 vs. not depressed), and antidepressant use. Models for all participants were also adjusted for race and sex.