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Short communication

Weight concerns and smoking in Black and White female smokers

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Abstract

We examined whether the weight concerns of Blacks and Whites who enroll in smoking-cessation treatment differed from women who declined treatment. Black (n=100) and White (n=100) female smokers completed four measures of weight concern. Whites reported more general weight concern and smoking-specific weight concern than Blacks did. Treatment enrollers reported more general and smoking-specific weight concerns than decliners did. After controlling for BMI, SES, and number of cigarettes, ethnicity accounted for significant variance in general and smoking-specific weight concerns. Overall, Blacks reported less weight concerns than the Whites did, but when Blacks enrolled in treatment, these differences were less apparent.

Keywords: Blacks; Weight concerns; Smoking; Obesity; Body dissatisfaction

Although it is healthier to quit smoking and gain 6–8 lbs than it is to continue to smoke (Froom, Melamed, & Benbassat, 1998), many White female smokers (40%) report that they use smoking as a weight-control strategy (Perkins, Epstein, & Pastor, 1990). Some women will not even attempt to quit smoking because of their fear of weight gain and excessive weight concern (Pomerleau & Kurth, 1996). A limitation of previous research on weight

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concerns is that the majority of studies have been conducted on White women, and there remains a need to systematically examine weight concerns among Black smokers, as noted in one recent study (Pomerleau, Zucker, Brouwer, Pomerleau, & Stewart, 2001). Moreover, the majority of previous studies have included smokers who are enrolled in smoking-cessation or weight management treatment (Levine, Perkins, & Marcus, 2001; Pomerleau et al., 2001), which places a limitation on the generalizability of these findings. Finally, because Black ethnicity has been confounded with socioeconomic status (SES) (Sobal & Stunkard, 1989) and Body Mass Index (BMI), there is a need to examine the influences of ethnicity, SES, and BMI on weight concerns.

The following hypotheses were tested: (1) Black females who enrolled in a smoking cessation treatment would report higher levels of general and smoking-specific weight concerns than would Blacks who decline treatment; (2) the weight concerns of White treatment enrollers would differ from that of White decliners; and (3) ethnicity would account for a significant amount of variance in weight concerns even after the variances due to BMI and SES were taken into account.

1. Method

1.1. Procedures

Participants were 100 adult female smokers who enrolled in a smoking-cessation and weight gain prevention treatment (50 Blacks and 50 Whites; Spring et al., 1999) and 100 female smokers (50 Blacks and 50 Whites) who declined treatment. Participants were recruited at community festivals, organizations, health fairs, and clinics, and through flyers and radio and television advertisements. After providing informed consent, they completed the questionnaires and measures. Participants were excluded (n=31) if they reported use of appetite or weight control medications; history of diabetes, hypoglycemia, mental illness, an eating disorder; nicotine replacement therapy; or significant missing data.

2. Measures

General weight concerns were measured by the *Drive for Thinness subscale* of the Eating Disorders Inventory-2 (EDI-2; Garner, 1991), the *Body Dissatisfaction subscale* of the Eating Disorders Inventory-2, and the *Restraint factor* of the Three Factor Eating Questionnaire (Stunkard & Messick, 1988). The individual subscales were transformed into Z-scores and summated to create a "general weight concerns" index (α=.64). *Smoking-specific weight concerns*, defined as the belief that smoking can be used as an appetite or weight control strategy and that smoking cessation leads to weight gain, was measured by the Smoking Situations Questionnaire (Weekly, Klesges, & Reylea, 1992). Socioeconomic status (SES) was assessed using the Hollingshead Four Factor Index of Social Position (Hollingshead, 1965). Obesity was assessed using self-reported weight and height to compute Body Mass

Index (weight [kg]/height [m]^2; Garrow & Webster, 1985). Cigarette intake was assessed by the number of cigarettes smoked per day. Nicotine dependence was measured by the Fagerstrom Tolerance Questionnaire (Fagerstrom, 1978). Expired carbon monoxide was measured via a hand-held carbon monoxide ecolyzer, which provided an assessment of recent smoke exposure (Hughes, Fredrickson, & Frazier, 1978).

3. Results

Whites smoked more cigarettes per day [Whites: M=20.6, S.D.=8.4; Blacks: M=15.2, S.D.=5.9; $F(1,196)=29.5$; $p<.01$] and had higher carbon monoxide levels than Blacks did [Whites: M=23, S.D.=10.0; Blacks: M=16, S.D.=9.04; $F(1,196)=27.8$; $p<.001$]. Blacks (M=29.2, S.D.=6.4) had a higher BMI than Whites did [M=25.1, S.D.=5.0; $F(1,196)=25.1$; $p<.001$]. Treatment enrollers (M=42.6, S.D.=9.9) were older than treatment decliners [M=39.6, S.D.=10.6; $F(1,196)=4.12$; $p<.05$]. Enrollers smoked more cigarettes per day [M=19.6 (S.D.=7.8) vs. M=16.3 (S.D.=7.3); $F(1,196)=10.9$; $p<.01$] and had higher carbon monoxide levels [M=21.9 (S.D.=11.0) vs. M=17.3 (S.D.=8.7); $F(1,196)=12.04$; $p<.01$] and Fagerstrom scores [M=5.8 (S.D.=1.9) vs. M=5.0 (S.D.=2.1); $F(1,196)=8.35$; $p<.01$] than decliners did. Finally, White decliners had a lower SES than White enrollers did [$F(1,99)=7.9$; $p<.01$], while Black decliners and enrollers did not differ in their SES level [$F(1,99)=62.41$; $p=.46$].

3.1. General and smoking-specific weight concerns

A between-subjects MANOVA revealed that the two-way interaction of ethnicity and treatment participation was nonsignificant [$F(1,196)=.68$; $p=.41$], as was their three-way interaction involving measure [$F(2,195)=.76$; $p=.47$]. Therefore, contrary to the first two hypotheses, Blacks and Whites did not differ in weight concern as a function of treatment participation. However, the main effect of ethnicity [$F(1,196)=4.84$; $p<.05$] indicated that, regardless of treatment status, Whites reported a higher level of general weight concern than Blacks did, constituting a moderately robust effect size of d=.31. An exploratory analysis revealed that Whites (M=.18, S.D.=1.0) exceeded Blacks on Cognitive Restraint [M=−.18, S.D.=.96; $F(1,198)=6.68$; $p<.05$] but did not differ in Body Dissatisfaction [$F(1,198)=1.13$; $p=.29$] or Drive for Thinness [$F(1,198)=1.90$; $p=.17$].

Results also revealed a two-way interaction between treatment participation and measure [$F(2,195)=4.24$; $p<.05$]. Further analysis revealed that the shape of the quadratic trend across the three weight concern scales differed for enrollers versus decliners [$F(1,196)=4.87$; $p<.05$]. Additional ANOVAs failed to detect differences between measures within enrollers or decliners or between groups on any measure (all ps>.07).

An ANOVA failed to detect an interaction between ethnicity and treatment participation on smoking-specific weight concerns [$F(1,196)=.09$; $p=.77$]. However, the main effect of

ethnicity [$F(1,196)=6.39$; $p<.05$] indicated that Whites ($M=8.1$, S.D.=2.7) reported higher levels of smoking-specific weight concerns than Blacks did ($M=7.2$, S.D.=2.8), constituting a moderately robust effect size of $d=.35$. The main effect of treatment [$F(1,196)=11.6$; $p<.01$] indicated that enrollers ($M=8.3$, S.D.=2.6) reported higher levels of smoking-specific weight concerns than decliners did ($M=7.0$, S.D.=2.7), constituting a moderately robust effect size of $d=.48$.

Hierarchical regression analyses revealed that the covariate block including BMI, SES, and number of cigarettes entered as the first step was a significant predictor of general weight concerns, accounting for 7.6% (R^2 change; $p<.001$) of the variance. Consistent with the third hypothesis, ethnicity entered on step 2 and accounted for 8.5% (R^2 change; $p<.001$) of the variance in general weight concerns, even after controlling for the covariates. Parallel analyses revealed that the covariate block did not explain significant variance in Cognitive Restraint (R^2 change=.01; $p=.66$) or smoking-specific weight concerns (R^2 change=2%; $p=.34$). Ethnicity accounted for 5.1% (R^2 change; $p<.01$) of the variance in Cognitive Restraint and 3.3% (R^2 change; $p<.05$) in smoking-specific weight concerns, even after controlling for the covariates. White ethnicity predicted greater General Weight Concerns ($p<.001$), Cognitive Restraint ($p<.01$), and Smoking-Specific Weight Concerns ($p<.05$).

4. Discussion

Contrary to the primary hypothesis, ethnic differences in weight concerns did not vary as a function of treatment participation. However, ethnicity exerted an important influence on Cognitive Restraint, General Weight Concerns, and Smoking-Specific Weight Concerns. This finding is consistent with studies showing that Black smokers engage less in dieting or weight control (Pomerleau et al., 2001) and are less likely to report smoking-specific weight concerns (Camp, Klesges, & Reylea, 1993) than Whites are. The lack of ethnic differences in Body Dissatisfaction and Drive for Thinness may reflect a homogenizing influence of smoking status.

In conclusion, this was the first systematic analysis of weight concerns among Black smokers and treatment decliners. An encouraging finding is that heightened weight concerns did not constitute a firm barrier that effectively precluded enrollment in treatment. Future studies should further investigate weight concerns among Black and White women who enroll in various types of smoking-cessation treatment programs.

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