Use of Food to Cope With Culturally Relevant Stressful Life Events Is Associated With Body Mass Index in African American Women

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Background: Although stress is an established contributor to obesity (in general population studies), mechanisms to explain this association in African American women that incorporate culturally relevant frameworks have received little attention.

Objective: To investigate how stress is associated with body mass index (BMI) in this population, we examined multivariate models of BMI predicted by race-related, gender-related, and generic stressful life events and by use of food to cope with stress. We hypothesized that the three types of stressful life events would be indirectly associated with BMI through using food to cope with stress.

Methods: Psychometrically robust measures were included in surveys administered to a socioeconomically diverse sample of 189 African American women aged 21–78 years. Hypotheses were tested using structural equation modeling. We examined race-related, gender-related, and generic stressful life events as latent constructs indicated by exposure to and appraisal of potential stressors predicting a mediator, using food to cope, which predicted BMI; this model also included direct paths from the three latent stressful life event constructs to BMI.

Results: Almost every participant reported using food in some way to cope with stress; 33% and 42% met established criteria for overweight and obesity, respectively. The race-related stressful life event construct was the only latent construct predicting using food to cope with stress, and using food to cope with stress predicted BMI. A significance test of indirect effects demonstrated that the race-related stressful life event construct was indirectly associated with BMI through the mediator, using food to cope.

Discussion: Culturally relevant stress exposures and stress-related eating are important areas of foci for tackling overweight, obesity, and related health inequities in African American women. Findings highlight the importance of developing more complex models to understand the stress-related factors that elevate risk for overweight and obesity in this population.

Key Words: African American women • eating behavior • health disparities • obesity • stress and coping

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Approximately four out of five African American women are overweight or obese, and they experience higher rates of overweight and obesity compared to all other ethnic groups of women in the United States (Office of Minority Health, 2020). African American women also have disproportionately high weight-related morbidity and mortality related to cardiovascular disease and diabetes (Office of Minority Health, 2011). Standard clinical guidelines for obesity prevention and treatment result in less successful outcomes for African Americans compared to European Americans (Kumanyika, Whitt-Glover, & Haire-Joshu, 2014). The development of successful interventions for African American women requires an integration of culturally and contextually specific factors that contribute to obesity (Tussing-Humphreys et al., 2013). Researchers have highlighted the influence of some cultural practices, preferences, and ideals on diet and exercise behavior that increase obesity risk among African American women (e.g., Joseph et al., 2015; Lovejoy, 2001). Some African

Americans are also exposed to environmental factors that contribute to increased obesity risk, including marketing of unhealthy food, poor availability of fresh produce, and a built environment that promotes sedentary behavior (Odoms-Young et al., 2009).

Psychosocial factors likely contribute to high obesity rates in this population. One promising avenue of research is the influence of stress and coping strategies on overweight and obesity in African American women, specifically stress-related eating behavior. This topic of study is especially important because the culturally specific experiences of stress among African American women (Jackson et al., 2005) may result in culturally nuanced strategies for coping (Woods-Giscombe & Black, 2010). African American women experience disproportionately high levels of stress as a result of interconnections between gender, race, and socioeconomic status (Jackson et al., 2005) and exposure to racial discrimination (Jones, 2002; Rosenthal & Lobel, 2020; D. R. Williams et al., 2008). Stress is a risk factor for various health disparities among African American women (Geronimus et al., 2010; Krieger, 2005). Stress is a well-established contributor to eating (Araiza & Lobel, 2018) and a social determinant of obesity (Kumanyika, Prewitt et al., 2014). The association between stress and overeating has been a prevalent theme in popular writing by African American women (Lovejoy, 2001), and empirical research has begun to demonstrate associations between stress and eating among African American women, as well (Cox et al., 2013; Johnson et al., 2012). Nevertheless, stress-related phenomena have been empirically underexplored in obesity research with African American women in ways that incorporate race-related and gender-related forms of stress.

Overeating in response to stress may be especially prevalent in African American women (Harrington et al., 2006). Eating has been described by African American women as a form of self-medication, with documented associations between perceived stress and snacking on sweets, emotional eating, and haphazard meal planning (Sims et al., 2008). There is also evidence that overeating has especially deleterious outcomes for African American women; the odds of becoming obese increase 15-fold for African American women who report eating beyond satiation compared to those who rarely or never eat beyond satiety (Brewer et al., 2003). By comparison, this increase is sixfold in European American women. Given these findings, it is important to examine whether unique, culturally relevant stressful life events associated with being African American women influence eating behavior and thereby contribute to overweight and obesity in this population. Two studies have investigated relationships among race-related stress, emotional eating, and body mass index (BMI) in collegiate Black women (Diggins et al., 2015; Longmire-Avital & McQueen, 2019). These studies found race-related stress predicted emotional eating above and beyond perceived stress (Longmire-Avital & McQueen, 2019) and that perceived and contextualized stress interacts with emotional eating to influence higher BMI (Diggins et al., 2015). These findings suggest that understanding the relationship between stress and BMI in African American women requires focusing on race- and gender-related stress and mechanisms through which these types of stress might contribute to body composition.

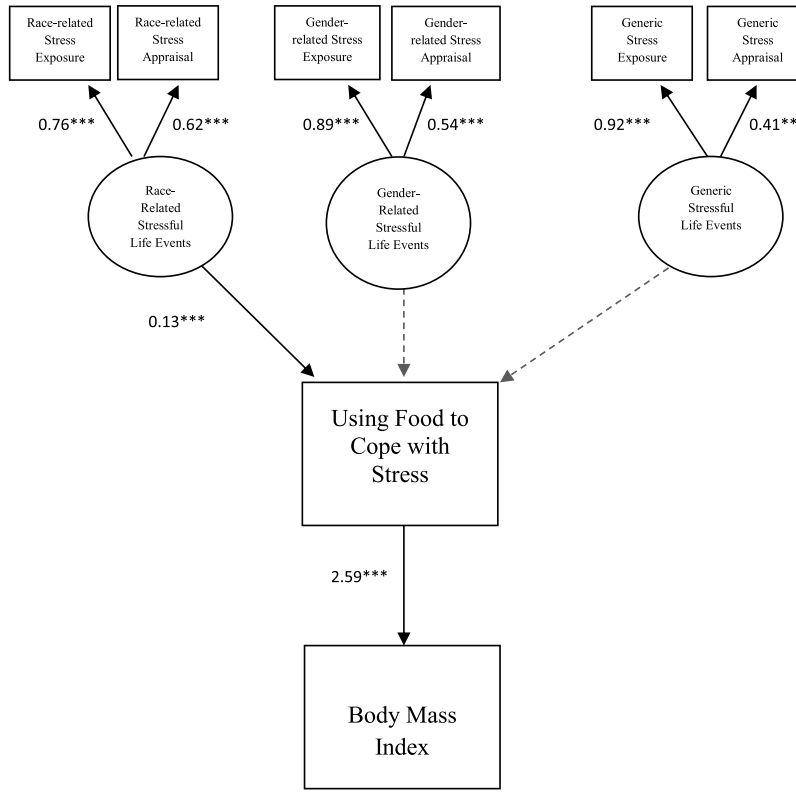
Our conceptual and operational definitions of stress and coping are grounded in transactional frameworks (Lazarus & Folkman, 1984), which emphasize the contribution of stressful events, as well as the degree to which each individual experiences events as stressful (cognitive appraisal) and their efforts to manage stress. We previously demonstrated that stress in African American women is composed of race-related, gender-related, and generic stress exposure and appraisal (Woods-Giscombe & Lobel, 2008). Building on this research, the current study included African American women from a broad age range (aged 21–78 years) to investigate how these three components of stress exposures and BMI are associated with food-related coping in this population. To explore these relationships, we conducted a secondary analysis of an existing data set (Woods-Giscombe & Lobel, 2008) to examine a multivariate model of BMI predicted by use of food to cope with stress and stress, with stress operationalized as latent constructs indicated by measures of race-related, gender-related, and generic stressful life events (see Figure 1). We hypothesized that race-related, gender-related, and generic stressful life events would be independent predictors of using food to cope and that using food to cope would be a significant contributor to BMI. In other words, we predicted that the three types of stressful life events would be indirectly associated with BMI through the mediator, using food to cope with stress.

METHODS

Participants and Procedure

The sample used for this analysis has been previously described (Woods-Giscombe & Lobel, 2008). As reported, participants (N = 189) were recruited from multiple settings in a Northeastern metropolitan area and a less populated Southeastern metropolitan area, including churches, civic organizations, a school parent/teacher association, and hair salons patronized primarily by African American women. English-speaking women, at least 21 years old, who identified themselves as African American were eligible and invited by a study staff member (all of whom were African American women) to complete a 30-minute questionnaire on "the health and well-being of African American women." Ninety-four percent of the women approached agreed to participate and provided informed consent. Study procedures were approved by the institutional review board of the university from which the research originated.

Participants ranged in age from 21 to 78 years (M = 41.5, SD = 14.3). Most participants (70%) identified themselves as Protestant Christian. Approximately 33% were married, 23.8%



Note: * p<.05. **p<.01. ***p<.001. Dashed lines connote nonsignificant paths.

FIGURE 1. Structural equation modeling with unstandardized coefficients.

were unpartnered, 21.7% were in a committed relationship but unmarried, 11.6% were divorced, and 5.2% were widowed. Approximately 54% had at least a bachelor's degree as their highest educational credential; 23% of those held a master's degree, a law degree, an MD, or a PhD. Approximately 17% were full- or part-time students. Median household income was between $26,000 and $50,000 annually. Approximately 25% earned less than $26,000; 37% reported earning more than $50,000.

Measures

Race-Related Stressful Life Events An adapted version of the Index of Race-Related Stress–Brief (IRRS-B; Utsey, 1999) was used; it contained 22 items assessing cultural, institutional, and individual racist events that participants or someone close to them experienced in the past year (e.g., "You were treated with less respect and courtesy than Whites and other non-Blacks while in a store, restaurant, or other business establishment"; "You were refused an apartment or other housing; you suspect it was because you are Black"). If participants indicated that the event did not happen, a value of "0" was assigned for race-related event occurrence (0 = *has never happened to me or someone very close to me*); if the event did occur, a value of "1" was assigned. For each event endorsed, participants indicated how much the event bothered them using the following response scale: 1 = *event happened but it did not bother me,* 2 = *event happened and I was slightly upset,* 3 = *event happened and I was upset,* and 4 = *event happened and I was extremely upset*. For this appraisal variable, a "0" was coded for events that were not endorsed. Two indices were created: race-related stress exposure (the total number of events that occurred) and race-related stress appraisal (the average appraisal of the 22 race-related stress events). The IRRS-B has exhibited excellent psychometric properties in previous research, including convergent and criterion validity in a sample comprised mostly of African American women (Utsey, 1999). The internal consistency of race-related events (Cronbach's α = .95) indicates co-occurrence of race-related events.

Gender-Related Stressful Life Events An existing measure of stressful life events developed from the Epidemiological Catchment Area research and used and validated in ethnically diverse samples of women (e.g., Lobel et al., 2000) was adapted for this study. Participants reported the occurrence of 15 stressful events related to gender during the past year (e.g., "Have you been treated unfairly or with less respect than you deserve

because you are a woman?" "Were you the target of inappropriate sexual advances?" "Did you have an unplanned pregnancy?"). They first indicated whether the stressful event occurred in the past year. A value of "0" was assigned for event exposure if the event did not occur; a value of "1" was assigned for event exposure if the event did occur. For each stressful event that occurred, participants rated how undesirable or negative it was on a 4-point scale, ranging from 1 (*not at all*) to 4 (*very much*). For this appraisal variable, a "0" was coded for events that were not endorsed. Two indices were created: the number of stressful events endorsed (gender-related stress exposure) and gender-related stress appraisal (the average appraisal of the 15 gender-related stress events).

Generic Stressful Life Events The measure of generic stress events was also adapted from an instrument validated in prior research (Lobel et al., 2000) and was composed of 25 stressful events with no race- or gender-related basis, including 15 stressors that the participant may have experienced (e.g., serious car accident, death of someone close) and 10 items that may have happened to the participant or to a close friend or family member in the past year (e.g., arrested, hospitalized). Participants first indicated whether the stressful event occurred in the past year. A value of "0" was assigned for event exposure if the event did not occur; a value of "1" was assigned for event exposure if the event did occur. For each stressful event that occurred, participants rated how undesirable or negative it was on a 4-point scale, ranging from 1 (*not at all*) to 4 (*very much*). A "0" was coded for appraisal of events that were not endorsed. Two indices were created: the number of stressful events endorsed (generic stress exposure) and generic stress appraisal (the average appraisal of the 25 generic stress events). Means and standard deviations for all stress indices are displayed in Table 1.

Using Food to Cope With Stress The Using Food to Cope With Stress Scale is a validated, seven-item scale that was developed with guidance from literature on African American women's use of food to cope with stress (Lovejoy, 2001). The Using Food to Cope With Stress measure enabled assessment of mundane stress-related eating behaviors rather than more pathological eating behaviors such as binge eating. Unlike other stress-related eating scales that focus more on the specific emotions leading to eating, the Using Food to Cope With Stress Scale examines various types of stress-related eating behaviors, lending more direct applicability to the development of interventions. Participants indicated how often they did each of the following over the past month as a way of coping with stress using a 5-point response scale (0 = *never* to 4 = *very often*): treated myself to dinner at one of my favorite restaurants; ate boxed or canned foods because I had less time to cook; ate even when I was not hungry; ate beyond the point of fullness because the food was so satisfying; ate "comfort food" like bread, chips, chocolate, or sweets; got together with friends to eat; and ate out or ordered take out because I did not have time or energy to cook. The scale exhibited excellent internal consistency in this study (α = .82) and in a sample of African American women and men with prediabetes (α = .82; Woods-Giscombe, Gaylord et al., 2019). The Using Food to Cope With Stress Scale was also positively correlated with measures of stress and coping in a sample of 130 African American women (Woods-Giscombe, Allen et al., 2019).

TABLE 1. Descriptive Statistics for Key Variables (*N* = 189)

	Mean[a]	*SD*	Min–Max
Race-related stress exposure	59.33	24.38	0–100
Race-related stress appraisal	2.59	0.71	0–4
Gender-related stress exposure	19.33	13.15	0–60
Gender-related stress appraisal	2.40	1.03	0–4
Generic stress exposure	20.89	13.63	0–64
Generic stress appraisal	2.71	0.88	0–4
Using food to cope	1.71	0.90	0–4
BMI	29.61	6.86	17.43–53.40

GRS = Gender-related stress; GS = Generic stress.

[a]For comparable interpretation of values, Index of Race-Related Stress, GRS, and GS exposure and appraisal, mean is the percentage of the highest possible value assessed.

Body Mass Index BMI was determined from self-reports of height and weight and calculated by dividing weight (in kilograms) by height (in meters) squared. Self-report has been shown to be generally reliable and highly correlated with actual height and weight (Bowman & Delucia, 1992).

Data Analytic Approach

Data were screened for missing values. Ninety-nine percent of the entire sample (n = 189) completed at least 90% of the entire questionnaire. Data for participants who were missing no more than 10% of the study variables were replaced using the Markov chain Monte Carlo multiple imputation method. SAS (Cary, NC) statistical software was used to conduct the Markov chain Monte Carlo method for each scale. Missed items were replaced for each participant based on their responses to other items within each scale.

We used MPLUS Version 6.0 (Muthén & Muthén, 1998–2010) to test study hypotheses using structural equation modeling. Race-related, gender-related, and generic stressful life events were operationalized as latent factors, each indicated by two measured variables, respectively: race-related stress exposure and appraisal, gender-related stress exposure and appraisal, and generic stress exposure and appraisal. This operationalization of stress for African American women grounded in the transactional model of stress and coping (Lazarus & Folkman, 1984) has been empirically corroborated (Woods-Giscombe & Lobel, 2008). A variety of fit indices were examined for

each model, as recommended (Grimm & Yarnold, 2000): the chi-square; the comparative fit index (CFI), with scores closer to 1.0 indicating good fit; the root mean square error of approximation (RMSEA), for which values of less than .10 are desired; the standard root mean square residual (SRMR), for which values of less than .08 are desired; and the Tucker–Lewis index (TLI), for which values of .90 or greater indicate good fit.

RESULTS

Table 1 displays ranges, means, and standard deviations of key variables; Table 2 displays correlations among key variables. The sample reported occurrences of approximately 59% of race-related stress events, 19% of gender-related stress events, and 21% of generic stress events. All of the stress exposure, stress appraisal, and Using Food to Cope With Stress variables were moderately and positively correlated (range: .23–.48), with one exception. Race-related stress exposure and generic stress appraisal were not correlated. BMI was positively correlated with generic stress exposure (r = .16) and Using Food to Cope With Stress (r = .28).

Ninety-three percent of participants reported using food in some way to cope with stress. Mean frequency of using food to cope with stress was 1.7 (SD = 0.9), corresponding closest with the response "sometimes." None of the demographic variables was associated with using food to cope. Three stress-related eating behavior items were endorsed more frequently than others: (a) coped with stress by eating out or ordering take out because of no time or energy to cook (80%), (b) coped with stress by getting together with friends to eat (77.2%), and (c) coped with stress by eating even when not hungry (76.2%).

The average BMI for the sample was 29.6 (SD = 6.9). Seventy-five percent of participants were overweight (32.8%) or obese (42.3%), which is comparable to national norms for African American women (Office of Minority Health, 2011). Nineteen percent were normal weight, and approximately 6% were underweight (BMI < 20). Christian religious affiliation and student status were associated with BMI (Christian and nonstudent participants had higher BMI values), so these two demographic variables were included as covariates in all models with BMI as the outcome variable.

Hypothesis Testing

Structural Equation Modeling We first tested a full structural equation modeling incorporating race-related, gender-related, and generic stressful life events as separate latent constructs predicting the mediator (use of food to cope) and then, with use of food to cope, predicting BMI directly (see Table 3). This full model specifies both direct and indirect effects through use of food to cope and stressful life event variables on BMI. Results show only race-related stressful life events as a predictor of using food to cope, which, in turn, was a predictor of BMI, $\chi^2(23) = 41.11$, p = .01 (RMSEA = .07, p = .21; CFI = .95; TLI = .90; SRMR = .07). With the nonsignificant paths displayed in Table 3 removed, a trimmed model confirmed that the path from race-related stress events to using food to cope remained significant (b = 0.13, p < .001), and the path from using food to cope with stress to BMI was significant (b = 2.59, p < .001). As displayed in Figure 1, race-related stressful life events are indirectly associated with BMI (through its effect on using food to cope), $\chi^2(28) = 52.81$, p = .003 (RMSEA = .07, p = .14; CFI = .93; TLI = .90; SRMR = .07). An inferential test of this indirect effect indicated that using food to cope with stress fully mediates the relationship between race-related stressful life events and BMI with stress (b = 0.34, p < .001).

DISCUSSION

To our knowledge, this is the first study to test a model of BMI in African American women that simultaneously examines the contribution of race-related, gender-related, and generic stressful life events and food-related coping. Study results support the idea that stress-related eating contributes to higher BMI in African American women and that such eating behavior is associated specifically with the experience of race-related stress exposure and appraisal.

Using Food to Cope Was Associated With BMI

As hypothesized, using food to cope with stress was associated with BMI, and it served as a mediator between race-related stressful life events and BMI. This finding is consistent with

TABLE 2. Correlations Between Key Variables (N = 189)

	1	2	3	4	5	6	7
1. Race stress exposure	—						
2. Race stress appraisal	.46***	—					
3. Gender stress exposure	.37***	.32***	—				
4. Gender stress appraisal	.23**	.36***	.48***	—			
5. Generic stress exposure	.28***	.37***	.59***	.35***	—		
6. Generic stress appraisal	.04	.28***	.26***	.34***	.40***	—	
7. Using food to cope	.39***	.23**	.37***	.28***	.39***	.23**	—
8. BMI	.07	.03	.05	.05	.16*	.04	.28***

*p < .05.
**p < .01.
***p < .001.

TABLE 3. Structural Equation Modeling of the Effects of Stressful Life Events on BMI ($N = 189$)

	CFAs		Using food to cope		BMI	
Effect decomposition	**Full model**	**Trimmed model**	**Full model**	**Trimmed model**	**Full model**	**Trimmed model**
Direct effects						
Overall race stress			0.06 (0.02)**	0.13 (0.03)***	0.02 (0.19)	
Overall gender stress			0.07 (0.08)		–0.59 (0.54)	
Overall generic stress			0.05 (0.04)		0.37 (0.27)	
Using food to cope					2.49 (0.61)***	2.59 (0.52)***
Indirect effects						
Overall race stress					0.16 (0.07)*	0.34 (0.10)***
Overall gender stress					0.18 ((0.20)	
Overall generic stress					0.13 (0.10)	
Total effects						
Overall race stress			0.06 (0.02)**	0.13 (0.03)***	0.18 (0.07)*	0.34 (0.10)***
Overall gender stress			0.07 (0.08)		–0.41 (0.44)	
Overall generic stress			0.05 (0.04)		0.50 (0.41)	
Using food to cope					2.49 (0.61)***	2.59 (0.52)***
Factor loadings						
Overall race stress						
Race stress exposure	1.00	1.00				
Race stress appraisal	0.11 (0.02)***	0.11 (0.02)***				
Overall gender stress						
Gender stress exposure	1.00	1.00				
Gender stress appraisal	0.31 (0.05)***	0.32 (0.05)***				
Overall generic stress						
Generic stress exposure	1.00	1.00				
Generic stress appraisal	0.11 (0.03)***	0.11 (0.03)***				
Model fit indices						
Full model: $\chi^2(23) = 41.11$, $p = .01$; RMSEA = .07, $p = .21$; CFI = .95; TLI = .90; SRMR = .07						
Trimmed model: $\chi^2(28) = 52.81$, $p = .003$; RMSEA = .07, $p = .14$; CFI = .93; TLI = .90; SRMR = .07						

Note. Standard errors are reported in parentheses. Both models of BMI include control variables for student status and Christian affiliation. BMI = body mass index; CFI = comparative fit index; CFA = Confirmatory factor analysis; RMSEA = root mean square error of approximation; SRMR = standard root mean square residual; TLI = Tucker–Lewis index.

*$p < .05$.

**$p < .01$.

***$p < .001$.

previous research (Brewer et al., 2003). Both stress and emotional distress have been associated with overeating or binge eating in African American women (Harrington et al., 2006), but prior studies have not examined how using food to cope with stress operationalized by specific behaviors, such as eating less healthy food to save time, is associated with BMI. For example, in examining binge eating behavior, Harrington et al. (2006) assessed factors including expectation for reinforcement from eating and dieting, emotions that lead individuals to feel an urge to eat, and ways that women might use eating to cope with traumatic life events (Harrington et al., 2006). In contrast, the Using Food to Cope With Stress measure assesses behavioral responses to stress that are less clinically perilous yet more common and therefore potentially influential regarding overweight and obesity. Responses include adapting to time limitations, using food as a "treat," and using food to mask or ease emotional discomfort. Future research might also profitably examine associations between stress and the quality (e.g., caloric density, dietary fat) and quantity of food that women consume to further understand stress-related risk factors for obesity.

Race-Related, Gender-Related, and Generic Stressful Life Events and Using Food to Cope

In the current study, the latent race-related stress construct was associated with using food to cope with stress. Gender-related and generic stressful life events were not associated with using food to cope with stress. Prior quantitative and qualitative research studies have identified discriminatory experiences (Diggins et al., 2015; Harrington et al., 2006; Longmire-Avital & McQueen, 2019) related to eating behavior among African American women. However, the investigation stress operationalized multidimensionally with use of food to cope with stress and BMI in a demographically diverse sample of African American women aged 21 years and up, as investigated in this study, is new. Our findings and those from other research corroborate

the value of examining unique stresses associated with being an African American woman to adequately assess the influence of identity-relevant (race and gender) stressful life events on health disparities in this population (Clark et al., 1999; D. R. Williams et al., 2008).

The findings of this study provide useful information regarding measurement of stressful life events to understand health outcomes in African American women. Results highlight the likely role of stress-related eating in overweight and obesity status in this population. In this sample, when stress was "teased apart" to facilitate examination of specific types of stressful life events (race, gender, and generic) and how they contribute to the eating–weight phenomenon, race-related stress was identified as the only type of stress associated with using food to cope. An important question emerges from these findings: (a) Why are race-related stressful life events, but not gender-related nor generic stressful life events, associated with using food to cope and indirectly associated with BMI in this sample?

One potential explanation is that the race-related stressful life events construct is a more emotionally and psychologically potent form of stress events, as measured in this study. The instrument used to assess race-related stressful life events (IRRS-B; Utsey, 1999) measured direct experiences of racism, including racial stigmatization, stereotyping, discrimination, and race-related oppression. In comparison, the instrument used to assess gender-related stress events is a more general measure of stressful life events unique to women, many of which (e.g., gave birth, unplanned pregnancy) may not have been experienced as a manifestation of sexism or gender discrimination. Research on stress and coping with discrimination and stigmatization highlights the devaluing qualities of discrimination and stigma and the heightened level of associated threat appraisals that may occur to protect or enhance personal or social identity (Berjot & Gillet, 2011). Because of these qualities, stress and coping responses related to stigmatization and identity threats are unique when compared to other types of life event stress and therefore may uniquely influence health and health-related behaviors (Berjot & Gillet, 2011; Clark et al., 1999). Previous research has found significant associations between discrimination and body composition (Lewis et al., 2011; Cunningham et al., 2013). However, there is less research on the emotional and physical responses to discrimination that may explain why a stronger relationship was found between race-related stressful life events and using food to cope compared to the other categories of stress in the current study. One team of researchers who found a positive association between visceral abdominal fat and self-reported experiences of discrimination in both African American and White women posited that physiological stress reactivity to discrimination (e.g., hypothalamic pituitary axis) may mediate the relationship between the stress of discrimination and abdominal fat (Lewis et al., 2011). Another prospectively designed study found self-reported experiences of discrimination were positively associated with both weight circumference and BMI in African American women, but not in African American men, White women, or White men (Cunningham et al., 2013). These researchers suggested the importance of examining differences in African American women's coping responses to discrimination. Along these lines, one study found that behavioral coping responses to perceived racism, but not perceived stress, was associated with higher BMI (Mwendwa et al., 2011). Another study found that African Americans who reported higher perceived discrimination also reported a higher frequency of eating to manage stress and a higher frequency of eating when depressed or sad compared to those who reported lower perceived discrimination (Johnson et al., 2012). Future research could examine these and other potential factors that may explain differences between stress related to discrimination and other sources of stress.

In the current study, the association of stress, specifically race-related stressful life events, was indirectly associated with BMI in this study through the use of food to cope with stress. This finding highlights the importance of developing more sophisticated conceptual models to understand stress-related factors that elevate risk for overweight and obesity. Future models would be improved by incorporating biological, psychological, behavioral (including physical activity and smoking), and social factors. Biopsychosocial mechanisms may be associated with gender-related and culturally relevant factors, including superwoman schema characteristics such as strength obligation, emotional suppression, and prioritization of caregiving over self-care, which are also positively associated with using food to cope in African American women (Woods-Giscombe, Gaylord et al., 2019). Empirical support for more comprehensive, multifactorial models is especially important given the strategic plan of federal agencies to encourage obesity research that recognizes the "complex interplay" of environmental, social, and behavioral factors to understand and eliminate health disparities in obesity (National Institutes of Health, 2016). Findings also support the importance of integrating transdisciplinary frameworks, such as the environmental affordances model, which emphasizes the importance of investigating multivariate associations among contextualized and comprehensive constructs of stress, mental health, and health behaviors to address social determinants of obesity and other health inequities (Mezuk et al., 2013). In addition, research incorporating a longitudinal design may provide valuable insight into how these factors influence obesity risk in African American women over time (Fowler-Brown et al., 2009).

A noteworthy observation about this study is the high level of education among sample participants; 54% had at least a bachelor's degree. This suggests that relationships among stress, eating-related coping strategies, and weight status are important to explore even in well-educated samples. It is also interesting to note that Christian religious affiliation was positively associated with BMI. Recent research on health status

of the Black church has highlighted pastors' concerns related to their congregants' dietary habits, as well as their own personal health risks, related to obesity and other chronic illnesses (L. F. Williams & Cousin, 2021). Future research can continue to address this important issue and build upon the body of research, including pastors as stakeholders, in church-based health promotion interventions to integrate faith-based values when addressing mental health, stress, food intake, and well-being (L. F. Williams & Cousin, 2021).

This study also offers implications for research on obesity prevention. Most participants reported using food in some way to cope with stress. These findings suggest a need to develop empirically founded interventions that promote stress and time management, introduce healthy meals that can be prepared in little time, and help women make healthier choices when eating outside their home. In addition, future research might focus on encouraging alternative and culturally relevant strategies for coping to minimize stress-related eating among African American women. Furthermore, this study highlights the need for research to explore strategies for coping with race-related stressors as well as the continued need for systemic, institutional strategies for reducing contextual sources of racism and other causes of stress-related health inequities facing African American women.

Limitations

Despite its strengths, this study lacked longitudinal, prospective data, limiting confidence in the causal direction of associations among study variables. Although longitudinal data would facilitate a more rigorous mediation analysis, it is important to note the temporal ordering of measures used in the current study. The race-related, gender-related, and generic stress exposure measures included inquiry into the participants' prior year of exposures. The mediator measure, coping with stress via food, included inquiry into the participants' coping behaviors in the past month. In addition, the BMI variable included height and weight status on the day of the questionnaire completion. Future research replicating the model tested in this study using longitudinal assessments would offer more definitive conclusions about the extent to which Using Food to Cope With Stress mediates the associations between race-related, gender-related, and generic stress exposures.

The existing data set used for this analysis was collected in 2004. Although race-related stress is not a new phenomenon in the lives of African American women, recent media focus on pandemic era racial disparities in health, racial injustices, police-related shootings of African American men and women, and politics-related conflict may have made this race-related stress more salient. Second, height and weight were self-reported, as were variables such as stress-related eating that may be underreported because of social desirability concerns. However, although some overestimation of height and underestimation of weight occurs, self-report has been shown to be generally reliable and highly correlated with actual height and weight (Bowman & Delucia, 1992). In addition, rates of overweight and obesity from participant self-reports were similar to national norms (Office of Minority Health, 2020). Nevertheless, the possibility that women underreported their weight or their eating suggests that the association of stress-related eating and obesity severity may be even stronger or different than that reported here. Furthermore, given the characteristics of our sample, it is possible that results may be most applicable to African American women with at least some college education and moderate income. Replication in other groups of African American women would be informative. Because weight is influenced by body type, muscle mass, and bone structure, additional measures (e.g., percentage of body fat, percentage of body water, and hip-to-waist ratio) could provide a more fine-tuned assessment of overweight and obesity (Clark et al., 2013).

Conclusions

Results of the current and related studies provide evidence-based support for the developing realization that stress and related coping strategies are probable contributors to the obesity epidemic among African American women. Our findings suggest that African American women may be especially vulnerable to obesity, in part, because of their food-related attempts to alleviate the race-related stress that they experience as women of color in American society. Given the prevalence of obesity among African American women and its serious health consequences, action is needed to address this problem using a multipronged approach, that is, with obesity interventions focused on individuals, communities, and social policy. Culturally tailored interventions for obesity prevention and weight reduction are imperative and should include consideration of the complex social context of African American women's lives, including the chronic existence of racism. The findings from this study can be used toward achieving these aims, so that African American women do not continue to carry "the weight of the world on their bodies" (Beauboeuf-Lafontant, 2003, pp. 115–116).

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