Article

Role Stress and Sense of Control Predict Using Food to Cope With Stress in Midlife Women

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Abstract

Objective: The current study examined the association between role stress and using food to cope with stress in midlife women and examined sense of control as a potential underlying mechanism. **Methods**: An archival analysis was performed using data from 638 midlife women from the Midlife in the United States II study. **Results:** Hierarchical linear regression analyses demonstrated that work stress ($\beta = .180$, $p < .001$) and family stress ($\beta = .138$, $p < .05$) significantly predicted using food to cope with stress. Sense of control was a significant mediator between work stress and using food to cope with stress ($b = 0.02$, 95% CI [.0014, .0314]). **Discussion:** Midlife women with higher role stress related to work and family are more likely to use food to cope with stress, and sense of control seems to be the link between work stress and using food to cope.

Keywords

diet/nutrition, health behaviors, psychology

Women in midlife are at risk for poor health outcomes including diabetes, metabolic syndrome, and breast cancer (de Wit et al., 2010; Flegal et al., 2013). Although etiology concerning health conditions in midlife is complex, two common, overlapping risk factors for poor health in this population are stress (Sievert et al., 2018) and engagement in negative health behaviors (Torres & Nowson, 2007).

Stress and Health in Midlife

Stress is a well-documented risk for poor health outcomes in adult populations. Stress increases risk of cardiovascular disease, stroke, as well as psychological concerns including anxiety and depression (Stewart et al., 2018). However, limited work has investigated how stress influences health in midlife women (Sievert et al., 2018). Midlife women are at a unique developmental time period associated with physiological changes and psychosocial stressors which influence health and well-being. In particular, women in midlife experience biopsychosocial changes due to menopause such as changes in hormone levels, increased accumulation of body fat in the midsection, and increased negative emotionality (Bromberger et al., 2007; Davis et al., 2012). In addition, women in midlife also experience a host of daily psychosocial stressors including work demands, family responsibilities, interpersonal stress, multiple role management, and daily hassles (Chen et al., 2018; Norberg et al., 2007). Although both menopause-related and psychosocial stressors decrease quality of life and influence poor health outcomes (Lee et al., 2012; Seib et al., 2014), less is known concerning how specific forms of stress influence negative health behaviors in this population.

Role stress, defined as stress that results from engagement in daily roles such as employee, caregiver, mother, and spouse, is a relatively novel aspect of stress that has been investigated in relation to midlife health (Chen et al., 2018; Heraclides et al., 2009). Role stress may be especially important in midlife, as midlife is often characterized by involvement in multiple roles in the family and community. In Erikson's eight stages of lifespan development (Erikson 1974), midlife is shaped by a drive for generativity. According to Erikson, successful aging in midlife occurs when individuals are fully involved and enriched by roles that positively contribute to future generations. The concept of role stress not only contributes to successful aging and well-being, but also to physical health in midlife. In particular,

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work and marital stress in midlife women has predicted increased body weight, increased risk of diabetes, and decreased engagement in healthy eating (Chen et al., 2018; Heraclides et al., 2009; Stewart et al., 2018). Additionally, chronic stress from lifestyle-related factors was associated with increased body mass index and more chronic illness (Seib et al., 2014). Although role stress has been investigated in relation to both negative health behaviors and negative health outcomes, most work to date has focused on negative *health outcomes* (e.g., overweight and obesity and diabetes; Chen et al., 2018; Heraclides et al., 2009). Only a handful of studies to date have investigated how role stress influences *health behaviors* (e.g., eating behaviors; Stewart et al., 2018). As research has demonstrated that stress that is daily and chronic across time increases appetite and desire for energy dense food (Schiffman et al., 2000), one behavior that is a relevant, yet unexplored outcome of role stress in midlife women is stress eating.

Eating Behavior and Health in Midlife

Stress eating, defined as eating in response to stress, involves overconsumption of food and/or consumption of energy dense food (Araiza & Lobel, 2018). Preliminary evidence suggests that engagement in stress eating is common in midlife women and more likely in women with high levels of negative emotionality (Schreiber & Dautovich, 2017; van Strien et al., 2016). Despite this, no work to date has investigated how specific forms of stress are related to stress eating in this population. As both stress-related eating and role stress have independently been identified as predictors of poor health outcomes, it is likely, yet unconfirmed that a connection exists between role stress and stress eating (Barbee & Timmerman, 2015; Spoor et al., 2007). Furthermore, as stress eating occurs in response to stress, it is likely that eating behaviors serve a role in dealing with stress. As women in midlife experience a host of daily psychosocial stressors (Chen et al., 2018; Heraclides et al., 2009; Stewart et al., 2018), the function of stress eating is of particular importance when thinking about the process of stress management in this population. As such, it is necessary to examine how midlife women may use food to cope with stress in multiple domains.

Mechanism Linking Role Stress and Stress Eating

Although women in midlife experience role stress and engage in stress eating behavior, both of which lead to poor health outcomes (Konttinen et al., 2010), less is known about *why* role stress in midlife women may be related to this behavior. One theory to understand this connection is the strength model of self-control. Self-control, defined as the capacity for an individual to alter behavior to align with values, morals, social expectations, and goals, is essential for the regulation of impulses and drives (Baumeister, 2003). Decreases in self-control have negative implications for both physical health outcomes (e.g., overweight and obesity) as well as emotional health outcomes and well-being (e.g., interpersonal tension and decreased mood; Baumeister et al., 1994). The model asserts that self-control draws from a common, global resource which is limited and vulnerable to depletion over time (Hagger et al., 2013). Additionally, individuals who deplete their stores of self-control are less able to exert self-control, thus influencing later behavior. Research supports this model with decreases in self-control showing negative implications for both physical health outcomes (e.g., overweight and obesity) as well as emotional health outcomes and well-being (e.g., interpersonal tension and decreased mood; Baumeister et al., 1994).

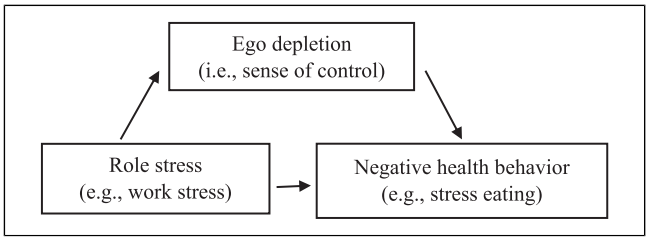

Figure 1. Theoretical model used to examine the association between role stress, sense of control, and negative health behavior.

As midlife women experience many daily stressors which can increase risk for depletion in self-control, the strength model of self-control may explain why role stress may be related to stress eating behavior (Almeida, 2005; Ballinger, 1990). In particular, role stress, including interpersonal concerns, work–life balance, and financial responsibilities are chronic daily stressors which are likely to influence internal and limited resources such as emotion management, attention, impulse management, and self-presentation (Baumeister et al., 2007). Although research has identified engagement in stress eating as a coping mechanism to manage feelings such as lack of control (Barbee & Timmerman, 2015; van Strien et al., 2016), no work to date has investigated how role stress specifically relates to stress eating behavior. Although research has investigated how diminished self-control influences weight gain, overweight, and obesity (Baumeister et al., 1994), limited work has examined how the model is associated with eating behavior *and* how specific forms of stress act independently to influence eating behavior (Figure 1; Baumeister et al., 2007; Hagger et al., 2013).

Aims and Hypotheses

The current study had two aims. First, the current study investigated whether greater role stress predicted increased tendency to use food to cope with stress in this population. The study also assessed what types of role stress (e.g., work, family, spouse, and friend) were most predictive of using food to cope with stress. Work, family, and spouse-related stress have been found to be associated with health outcomes and particular health behaviors (Chen et al., 2018; Heraclides

et al., 2009). Friend stress is a novel form of role stress that was explored in the current study. Friend stress was examined based on previous work that has found a connection among social relationships and health behaviors (Stewart et al., 2018). Next, sense of control was examined as a potential mechanism linking role stress to using food to cope with stress. It was hypothesized that role stress pertaining to work, family, spouse stress, and friend stress would be associated with greater endorsement of using food to cope with stress. It was also hypothesized that sense of control would mediate the association between role stress and using food to cope with stress. In particular, women with higher role-related stress would endorse a greater loss of control which would influence greater engagement in using food to cope with stress.

Methods

Participants

Participants are from the Midlife in the United States (MIDUS) II study, a longitudinal telephone and paper-and-pencil follow-up survey of the original MIDUS I study (N = 7108). Data collection for MIDUS-II took place from 2004 to 2006. All eligible participants were noninstitutionalized, English-speaking adults, and between 35 and 86 years of age. The MIDUS-II sample included approximately 4963 participants and consisted of four subprojects. Data for the current study are taken from Project 1 of the MIDUS-II study. Project 1 investigated the role of behavioral, psychological, and social factors in age-related differences in mental and physical health.

The current study consists of a subsample of 638 female MIDUS-II participants between the ages of 40 and 64 who completed Project 1 of the MIDUS-II study. Participants were included if they were in the specified age range (i.e., 40–64) and completed demographic, psychological, and physical health measures.

Procedures

In MIDUS-II, Project 1, participants completed a phone interview and two self-administered questionnaires measuring psychological constructs, demographic variables, and mental and physical health. Additionally, subsets of participants completed a physical examination where body index measurements (e.g., BMI) were taken using a standardized method by MIDUS-II staff. The physical exam data were collected during an overnight stay at one of three General Clinical Research Centers in Madison, WI, Los Angeles, CA, or Washington, DC. The current study used data from participants who completed Project 1 and participated in the physical examination.

Materials

Role stress. The overarching construct of role stress was defined as stress resulting from specific roles related to work, family, spouse, and friends. Various forms of role stress were measured via self-administered questionnaires.

Work stress. Work stress was measured through a questionnaire where participants answered questions relating to "work to family spillover." Informed by role strain theory, the work to family spillover measure was conceptualized as when responsibilities of work interfere with responsibilities at home (Grzywacz & Marks, 2000). Participants answered four questions including "your job reduces the effort you can give to activities at home," "stress at work makes you irritable at home," "your job makes you feel too tired to do the things that need attention at home," and "job worries or problems distract you when you are at home." Responses were rated on a 5-point Likert scale (1 = all of the time, 5 = never). Scores were calculated by taking the sum of the values and reverse-coding items, so high scores reflected higher stress. Alpha coefficients were .82.

Family stress. Family stress was measured through a questionnaire where participants answered questions relating to "family to work spillover." Informed by role strain theory, the family to work spillover measure was conceptualized as when responsibilities of family interfere with responsibilities at work (Grzywacz & Marks, 2000). Participants answered four questions including "responsibilities at home reduce the effort you can devote to your job," "personal or family worries and problems distract you when you are at work," "activities and chores at home prevent you from getting the amount of sleep you need to do your job well," and "stress at home makes you irritable at work." Responses were rated on a 5-point Likert scale (1 = all of the time, 5 = never). Scores were calculated by taking the sum of the values and reverse-coding items, so high scores reflected higher stress. Alpha coefficients were .80.

Spouse stress. Spouse stress was defined as "spouse strain." Spouse strain is a measure developed by Whalen and Lachman (2000) to capture the irritating, critical, and unreliable exchanges in a spousal relationship. Strain was measured through a four item, self-report measure using a 4-point Likert-type scale (1 = often, 4 = never). Scores were calculated by taking the sum of the values and reverse-coding items, so high scores reflected higher stress. Items included: (a) How often do they criticize you? (b) How often do they make too many demands on you? (c) How often do they let you down when you are counting on them? (d) How often do they get on your nerves? Alpha coefficients were .87.

Friend stress. Friend stress was defined as "friend strain." Friend strain is a measure developed by Whalen and Lachman (2000) to capture the irritating, critical, and unreliable exchanges in a friend relationship. Strain was measured by four parallel items utilized for the spouse strain measure. Items

were rated on a 4-point Likert scale (1 = often, 4 = never). Scores were calculated by taking the mean of the values and reverse coding, so higher scores indicated higher stress. Items included: (a) How often do they criticize you? (b) How often do they make too many demands on you? (c) How often do they let you down when you are counting on them? (d) How often do they get on your nerves? Alpha coefficients were .79.

Sense of control. Perceived sense of control was conceptualized as a combination of personal mastery and perceived constraints, which is consistent with Skinner's (1996) definition of sense of control. Personal mastery describes one's sense of self-efficacy, whereas perceived constraints refer to one's beliefs that external factors limit their self-efficacy. Scores for sense of control were calculated by averaging two control subscales consisting of six items each (personal mastery and perceived constraints; Lachman & Weaver, 1998). Each item was assessed on a 7-point scale. Personal mastery items included: "I can do just about anything I set my mind to," and perceived constraint items included: "What happens to me is often beyond my control" (Lachman & Weaver, 1998). Items on the personal mastery scale were reverse coded such that higher scores reflect more perceived control. Alpha coefficients were .85.

Using food to cope with stress. Using food to cope with stress was measured via a coping questionnaire where participants were asked to indicate how they "usually experience a stressful event." Two choices included: "I eat more of my favorite foods to make myself feel better" and "I eat more than I usually do." Responses ranged from 1 = a lot to 4 = not at all. The sum of the two questions was obtained and reverse coded, so higher scores indicated greater stress eating. Scores ranged from 2 (not all) to 8 (a lot). The correlation between the two items was .80 in the full MIDUS-II analytical sample. Cronbach's alpha was .90 for the study sample.

Covariates. Covariates in the current study included waist circumference, menopausal status, age, racial identity, and depressive symptoms (Bromberger et al., 2007; Davis et al., 2012; Ogden et al., 2015). Waist circumference was measured by taking a measurement, in inches, of each participant's waist above the navel. Physical measurements were collected during a physical exam. Menopausal stage was calculated using participant responses to a medical history questionnaire specific to women's health. Women were classified as premenopausal if they answered "Yes" to having a menstrual period in the last year. Women were classified as postmenopausal if they answered "No" to "Have you have a menstrual period in the last year?" and "Yes" to "Do you know if your menstrual period stopped due to menopause?" Depressive symptoms were assessed with the WHO Composite International Diagnostic Interview–Short Form (Kessler et al., 1998). Scoring ranged from 0 to 7, where 0 represented participants diagnosed as negative for major depression, and scores between one and seven represented the range of depressive symptom severity.

Data Analyses

Data preparation and data cleaning. SPSS 27.0 was used for all data analyses. Data were cleaned, and descriptive statistics were calculated to verify that data meet the assumptions of the planned analyses. A review of skewness, kurtosis, and outliers for all main variables and covariates of interest was completed. Power calculations using G*Power (Faul et al., 2009) suggested that for regression analyses, a sample size of at least 118 participants would be needed to predict an R^2 of at least .15 at an alpha level of .05, with a power of .80 ($1 - \beta$). In the current study, assuming a medium effect size, 638 participants were sufficient to detect an effect.

Planned statistical analyses. Pearson correlation coefficients identified significant bivariate associations between role stress, using food to cope with stress, and covariates. Additionally, t-test analyses were run to compare food to cope and weight variables across menopause status groups. Next, hierarchical linear regression analyses tested the association between role stress and using food to cope with stress. First, the association of specific types of role stress (e.g., work, family, spouse, and friend) with using food to cope with stress was investigated. Covariates were entered into step one. Role stress variables were entered as step two. Hayes' SPSS PROCESS macro (Hayes, 2012) tested the association of role stress with using food to cope with stress and the mediating role of sense of control in this association including aforementioned covariates. To increase power, only variables that were significantly associated with using food to cope with stress in hierarchical linear regression analyses were used in mediation analyses. Using the PROCESS macro, the direct effect of role stress on using food to cope with stress was tested using ordinary least squares path analysis. The indirect effect of sense of control was tested using a nonparametric, bias-corrected bootstrapping procedure that provided an empirical approximation of the sampling distribution of the product of the estimated coefficients in the indirect paths using 5000 resamples from the data set.

Results

Descriptive Analyses

Descriptive statistics of demographics, covariates, and predictors are presented in Table 1. Participants were primarily white and had an average age of 51.16 (*SD* = 7.19). On average, participants had an annual income of $70,001 (*SD* = $56,150) and rated their physical health as 2.30 (*SD* = 0.95) on a five-point scale, with higher scores indicating worse self-rated health. Using food to cope did not significantly differ

Table 1. *Participant sociodemographic and health characteristics.*

Variable (*M, SD*)	*N*	Percentage
Age (51.16, 7.19)	824	
Race/ethnicity		
White	760	92.2
Black	32	3.9
Native American	7	0.8
Asian	3	0.4
Other	22	2.6
Annual income ($70,001, 56,150)		
Menopause status		
Premenopause	392	47.6
Postmenopause	432	52.4
BMI (27.49, 6.68)*		
Premenopause (26.87, 5.99)		
Postmenopause (28.04, 7.21)		
Waist circumference (35.44, 6.30)*		
Premenopause (34.42, 6.03)		
Postmenopause (35.72, 6.37)		
Self-rated health (2.30, 0.95)		
Premenopause (2.14, 0.91)		
Postmenopause (2.39, .96)		
Depressive symptoms (0.74, 1.88)		
Premenopause (0.76, 1.88)		
Postmenopause (0.72, 1.88)		
Using food to cope with stress (4.20, 1.96)		
Eat more than usual (2.84, 1.05)		
Eat favorite foods (2.80, 1.96)		
Using food to cope with stress (by status)		
Premenopause (4.19, 1.96)		
Eat more than usual (2.91, 1.03)		
Eat favorite foods (2.90, 1.01)		
Postmenopause (4.21, 1.96)		
Eat more than usual (2.86, 1.02)		
Eat favorite foods (2.93, 1.04)		

Note. Self-rated health consists of scale ranging from 1 to 5 with items reversed scored such that 1 indicates "excellent" and 5 indicates "poor." Depressive symptoms were measured on a 0–7 scale, where 0 indicated negative for major depression, and scores between one and seven represented the range of the symptom severity. Using Food to Cope with Stress scale consists of responses to two questions (i.e., "eat more than usual" and "eat favorite foods"). Responses range from 1 to 4 and were reverse coded with higher ratings indicating greater use of food to cope with stress. The composite stress eating score was obtained by creating a sum of the two questions. Scores range from 2 to 8 with higher scores indicating greater use of food to cope with stress. * indicates mean differences among premenopause and postmenopause groups.

between menopause status groups (pre- and post-menopause) as assessed by t-test ($p = .602$). Menopause status groups did differ, however, in terms of their weight outcomes with the postmenopause group having significantly higher BMI and waist circumference compared to the premenopause group as assessed with t-tests (see Table 1). Pearson correlations examined bivariate associations between main variables and covariates (Table 2). Of note, fewer participants completed measures for main variables than for demographic information.

Association between Role Stress and Using Food to Cope with Stress

A hierarchical regression analysis examined stress eating as a function of selected covariates (i.e., BMI, menopause status, depressive symptoms, race, and age; step 1) and individual role stress (step 2) to determine if specific types of role stress were significantly associated with using food to cope with stress when controlling for covariates.

Table 3 reports the unstandardized (B) and standardized (β) regression coefficients for step 1 and step 2. Step 1 accounted for a significant amount of the variance in using food to cope with stress ($R^2 = .153$, $p < .001$). Waist circumference ($\beta = .345$, $p < .001$), depressive symptoms ($\beta = .115$, $p < .05$), and race ($\beta = -.114$, $p < .05$) explained a significant amount of variance in using food to cope with stress, with higher waist circumference, depressive symptoms, and minority racial status associated with greater use of food to cope with stress. Additionally, role stress (i.e., step 2) accounted for a unique portion of the using food to cope with stress variance, R^2 change =.091, $p < .001$. The final model accounted for 24% of the variance in using food to cope with stress. In the second step, two variables explained additional variance in using food to cope with stress. Work stress ($\beta = .180$ $p < .001$) and family stress ($\beta = .138$, $p < .05$) were associated with greater use of food to cope with stress.

Sense of Control as a Mediator of Role Stress and Using Food to Cope with Stress

Bootstrapping analyses assessed the indirect effect of role stress on using food to cope with stress via sense of control. Only significant predictors of using food to cope with stress in the hierarchical linear regression results were included in mediation analyses. As such, two mediation models were conducted (Model 1: work stress, Model 2: family stress) with waist circumference, race, age, menopausal status, and depressive symptoms used as covariates.

After controlling for the selected covariates, sense of control was a significant mediator in the work stress—using food to cope with stress association, $b = 0.02$, 95% CI [.0014, .0314]) but not the family stress—using food to cope with stress association, $b = 0.02$, 95% CI [-.0013, .0450]. Higher work role stress predicted less sense of control, which, in turn, predicted greater use of food to cope with stress (Figure 2).

Discussion

The current study examined the association between role stress and using food to cope with stress in midlife women and used the strength model of self-control as an explanatory mechanism. It was hypothesized that role stress would be associated with greater endorsement of using food to cope with stress, and sense of control would mediate this association. Overall, greater work and family stress were related

Table 2. *Pearson correlation coefficients among role stress, stress eating, and covariate variables in overall sample (N = 638).*

	Using food to cope	Family stress	Work stress	Spouse stress	Friend stress
Using food to cope with stress	—	—	—	—	—
Family stress	.228**	—	—	—	—
Work stress	.254**	.509**	—	—	—
Spouse stress	.099*	.338**	.224**	—	—
Friend stress	.098**	.284**	.210**	.300**	—
Depressive symptoms (c)	.146**	.006	.109**	.193**	.107**
Race (c)	−.114**	.349	.089	.027	.686
BMI (c)	.355**	.195	.025	.043	.003
Waist circumference (c)	.314**	.028	.069*	.052	.045
Age (c)	.016	−.160**	.261	−.104	−.072*
Menopause status (c)	.006	−.118**	−.007	.257	−.017

Note. (c) indicates covariate. *p<.05, **p<.001.

Table 3. *Hierarchical regression results for individual role stress.*

	B	*SE* B	β
Step 1			
Waist circumference	.118	.015	.345**
Depressive symptoms	.131	.049	.116*
Race	−.243	.092	−.114*
Age	.014	.020	.051
Menopause states	−.432	.268	−.112
Step 2			
Waist circumference	.115	.014	.335**
Depressive symptoms	.079	.047	.071
Race	−.280	.087	−.131*
Age	.031	.019	.109
Menopause status	−.568	.255	−.147*
Work stress	.127	.034	.180**
Family stress	.111	.040	.138*
Spouse stress	.080	.135	.026
Friend stress	.236	.184	.057

Note. R^2 = .153 for step 1, ΔR^2 = .091 for step 2 (total R^2 = .244). *p<.05, **p<.001.

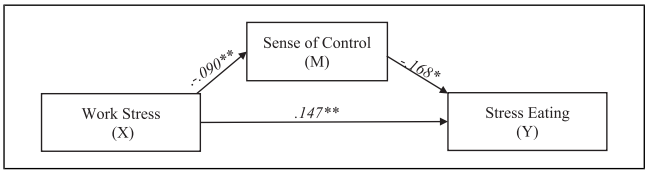

Figure 2. Simple mediation model for the association between work stress and stress eating as mediated by sense of control. **p<.001, *p<.05.

to greater use of food to cope with stress, meaning that eating may be a way that midlife women cope with stress associated with specific roles they encompass. Additionally, sense of control helped to explain the process by which work stress was related to using food to cope with stress. For midlife women, the specific stress related to work roles is tied to their own sense of control. Eating behaviors appear to be a way that midlife women cope with depleted sense of control due to work-related role stress. However, it is important to note that role stress differed depending on the type of role, and only work stress was tied to sense of control as an underlying mechanism.

The first aim of the current study investigated if midlife women may use food to cope with the stress they experience in different roles. This was novel as few studies have investigated this association in midlife women. Only one study to date has focused on the relation between role stress and eating behavior in midlife women. Stewart et al. (2018) investigated the link between social role stress and cardiovascular risk factors in midlife women and found that higher role stress was associated with less healthy diets and higher BMI. The current study corroborates this finding by demonstrating an association of role stress with eating behavior. The current study adds to existing literature by highlighting the impact of role stress on using food for the purpose of coping, rather than focusing on the nutritional content of dietary intake of food. This differentiation is important as emerging research indicates eating behavior can predict negative health outcomes independent of dietary quality in midlife (Yoon, 2017).

Surprisingly, the current study did not find role stress in the friend or spousal domains was related to using food to cope with stress. This result was surprising as previous work has indicated a relation among marital quality, social support, and health outcomes (Chen et al., 2018). There is also evidence that unsupportive social interactions increase emotion-related eating (Raspopow et al., 2013). Potential explanations for this null effect include the study's definition of spouse and friend stress. Although the current study used "strain" as a measure of stress, emerging research indicates that there may be quantitative differences between strain and other indicators of social role stress. For example, Chen et al. (2018) found a significant association between low marital support and

weight but failed to find a relation among martial strain and weight. Chen et al. (2018) hypothesized that strain may be less prevalent in middle aged couples as they may have been in the committed relationship long enough to develop coping strategies to manage negative experiences. Additionally, there is evidence that both positive and negative aspects of relationships influence health. Thus, the current study potentially did not fully capture the complicated nature of relationships. Future work should examine a more inclusive definition of relationship stress as quality of a relationship may be more useful to explore rather than presence or absence of strain (Chen et al., 2018).

The current study also contributed to the literature by examining what mechanism may explain how using food to cope is related to role stress in midlife women. The current study investigated how role stress is tied to midlife women's sense of control, which in turn is related to using food to cope. Sense of control did explain how role stress in work domains was related to using food to cope, which supports research that has indicated individuals with depleted self-regulatory capacity are more likely to consume tempting foods (Baumeister, 2003). However, this finding is somewhat at odds with previous research which has not identified a link between work stress, sense of control, and health outcomes in midlife women. In a review of cardiovascular disease risk in midlife women, Low et al. (2010) found that less sense of control specific to work stress was not associated with cardiovascular disease. Although discrepancies exist concerning the association between control and health-related outcomes, an important distinction between the current study and previous work is the focus on health *behaviors* rather than *outcomes*. The current study provides novel information regarding mechanisms connecting stress and health. As negative health outcomes and disease progression are a result of multiple factors across time (e.g., health behaviors, genetic predisposition, and psychosocial influences; Stewart et al., 2018), it is possible that more proximal indicators of health may be more relevant to explore when examining the impact of control on health. Future work should continue the investigation of the association among stress, health behaviors, control, and health outcomes.

Conclusions and Implications for Practice and/or Policy

The current study provides evidence that midlife women may use food to cope with stress related to specific roles they encompass. Specifically, higher family and work stress was related to using food to cope with stress. Furthermore, role stress, specifically related to work, is tied to midlife women's sense of control, which then is related to using food as a coping mechanism. This study adds to the growing body of literature examining stress and health behaviors in midlife women (Chen et al., 2018; Stewart et al., 2018).

As women in midlife engage in multiple roles which subject them to stress and poor health behaviors and outcomes, the current study has several clinical implications. First, the current study provides a potential intervention target to prevent negative health behaviors. As women in midlife are at an increased risk for the development of poor weight outcomes and poor health outcomes due to multiple factors (e.g., hormonal changes and lifestyle factors; Al-Safi and Polotsky, 2015), it is often challenging to identify specific pathways to effectively intervene. The current results suggest that family and work stress lead to using food to cope with stress. As previous work highlights the negative influence of stress eating on health outcomes (Barbee & Timmerman, 2015; Spoor et al., 2007), the current study highlights a behavioral target (i.e., eating behavior) to potentially decrease poor health outcomes in midlife women. Additionally, the current study provides insight as to *why* women in midlife may engage in using food to cope with stress.

Strengths and Limitations

Although the current study has many strengths, several limitations must be addressed. First, the study used cross-sectional data. Therefore, causality or directionality cannot be determined. Although the current study is novel in examining how midlife women use food to cope with stress from multiple roles, future studies should consider using validated measures of stress eating. We assessed using food to cope with stress using a two-question measure rather than a comprehensive scale. Eating in response to stress is exhibited through a variety of behaviors; therefore, a comprehensive measure of stress eating would be more likely to fully capture the variety of eating behaviors used in response to stress. The current study was also not able to measure dietary habits (e.g., type and/or quantity of food consumption), current stress levels, or hormonal factors (e.g., estrogen), so it is unclear how stress eating may be affecting these components. There was also a limitation in the measurement of role stress. Due to secondary data analysis limitations, role stress measures were obtained from standalone questionnaires rather than one validated measure of role stress. Last, there was a lack of racial diversity in the current sample. As a majority of the women were white, generalizability of results is limited.

Despite limitations, the current study has several strengths. First, data were collected from a large, representative sample of midlife adults in the United States. The study is also novel in its exploration of the influence of specific stress (i.e., role stress) on health *behaviors* in this population rather than a focus on negative health *outcomes.* As such, the current study provides information regarding a potential pathway linking stress to negative health, although the current study cannot draw conclusions regarding how role stress and using food to cope with stress influences negative health outcomes. More research, specifically prospective, longitudinal research, is needed to further explore this association between role stress

and using food to cope with stress to identify causal associations. Furthermore, additional exploration of how this association is related to other health behaviors (e.g., sleep) and negative health outcomes (e.g., cardiovascular disease) is warranted.

Author Note

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