



What's eating you? Risk factors for poor health behaviors among family caregivers

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ABSTRACT

Objectives: Overeating and obesity are major public health issues in the United States. Caregivers are at greater risk of engaging in poor health behaviors, such as emotional eating, to cope with the demands of caregiving. Using Heatherton and Baumeister (1991) Escape Theory, this study examines the associations between caregiver characteristics (i.e. age, gender, and BMI) and emotional eating, including the extent to which family strain mediates these associations.

Method: Data are from the MIDUS 3 dataset ($N=326$) and include family caregivers of older adults and children with special health care needs (Mage = 62.88 years, SD = 10.28; 69.6% female).

Results: Female caregivers were more likely than male caregivers to engage in emotional eating. Age was significantly associated with emotional eating, where increased age was associated with less emotional eating. ANCOVA results indicated that obese caregivers were the most likely to engage in emotional eating. Results also indicated that family strain significantly mediated the association between caregiver age and emotional eating. Linear regression analyses indicated that female gender predicted emotional eating, although family strain did not mediate the association between gender and emotional eating. Similarly, after controlling for family strain as a mediator, higher BMI was still significantly associated with emotional eating, suggesting that BMI is a strong predictor of emotional eating among family caregivers regardless of present family strain.

Conclusion: Interventions targeted at managing family strain, particularly for younger, female caregivers, could improve coping and decrease poor health behaviors.

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Introduction

Overeating and obesity in the United States is a major public health issue with 42.4% of adults considered obese in 2017–2018 (Hales, Carroll, Fryar, & Ogden, 2020). Health problems linked to obesity include: type 2 diabetes, various cancers, stroke, and joint disease (Esser, Legrand-Poels, Piette, Scheen, & Paquot, 2014; Kim & Basu, 2016). Emotional eating, a risk factor of obesity, is associated with negative physical outcomes such as worsened glycemic control and prediabetes (Tsenkova, Boylan, & Ryff, 2013). Furthermore, the economic costs of obesity to society is estimated at over \$145 billion (Kim & Basu, 2016).

About 53 million individuals serve as informal caregivers to an adult and/or child with special needs (National Alliance for Caregiving (NAC) & AARP, 2020). The responsibilities associated with assisting care recipients across the lifespan can make this role arduous for the caregiver. Caregivers are at risk of engaging in poor health behaviors, such as emotional eating (i.e. eating in response to stressors and negative affect; MacDougall & Steffen, 2017; Tomiyama, Finch, & Cummings, 2015), to cope and self-medicate with the strains associated with providing caregiving assistance (MacDougall & Steffen, 2017).

Providing care to an aging adult or a child with a disability or special healthcare need can be taxing and burdensome (Hayes & Watson, 2013). Caregivers to children with developmental disabilities often provide life-long

assistance, which is associated with depression and decreased self-rated health over time (Benson, 2016). In addition to employment and financial strains (Saunders et al., 2015), caregiving is also associated with declines in physical (Danilovich, Xiang, & Pinto, 2017) and emotional health (Hopps, Iadeluca, McDonald, & Makinson, 2017; Koumoutzis, Cichy, Dellmann-Jenkins, & Blankemeyer, 2020). Furthermore, caregivers who experience mental and emotional strain are likely to experience caregiver burden (Denno et al., 2013).

The stress associated with caregiving is linked to maladaptive coping skills and negative health outcomes such as sleep disturbances (Mihaila & Hartley, 2018), decreased exercise (Hamer, 2012), and emotional eating (MacDougall & Steffen, 2017; Tomiyama et al., 2015). Despite dependence on caregivers to provide needed assistance, little is known about how caregivers' tendency to engage in poor health behaviors, like emotional eating, vary by individual characteristics and put caregivers at risk for negative health outcomes (Ross, Sundaramurthi, & Bevans, 2013).

Family relationships may serve as sources of support or strain during the caregiving experience (Litzelman, Kent, & Rowland, 2016), yet less attention has been given to how these social factors influence wellbeing. Although older age is associated with more positive social functioning (Birditt, 2014; Litzelman et al., 2016), the relationship between caregiver's characteristics, family strain, and emotional eating

remain unknown. Given the complexities of caregiver characteristics (e.g. age, gender, and body mass index (BMI)) and the social contexts within which caregiving occurs, understanding the associations between caregiver characteristics and negative health behaviors is crucial to improve caregiver self-care. To our knowledge, a limited amount of research has focused on emotional eating among family caregivers (MacDougall & Steffen, 2017) or has only focused on weight gain as an outcome of caregiver stress (Fredman & Daly, 1997). The present study addresses this gap in the literature by examining how caregiver characteristics (i.e. age, gender, and BMI) are associated with emotional eating among family caregivers.

Individual differences in emotional eating

According to the American Psychological Association (2017), nearly 40% of Americans report having engaged in emotional eating as a direct result of stress. Emotional eating is one way some individuals respond to and cope with unpleasant physiological and emotional responses resulting from external stimuli (Chao et al., 2016). Stress is associated with an overconsumption of calorically dense foods (Cummings, Mason, Puterman, & Tomiyama, 2018; Klatzkin, Baldassarro, & Rashid, 2019), and those individuals who experience high stress tend to consume more calories than those experiencing less stress (Klatzkin et al., 2019). Moreover, persistent stress exposure may alter the brain's response to food, predisposing individuals to crave unhealthy food options in excess, which results in poor eating habits (Tryon et al., 2015). Recent research has found that the tendency to engage in emotional eating varies by individual characteristics, including age (Tsenkova et al., 2013), gender (Chao et al., 2016; Opwis, Schmidt, Martin, & Salewski, 2017), and BMI (Wilson, Darling, Fahrenkamp, D'Auria, & Sato, 2015).

The proclivity towards unhealthy eating habits varies by age. For example, younger age has been associated with a greater propensity towards unhealthy eating habits. Men and women aged 55–64 years old experienced less weight gain compared to younger age groups (Block, He, Zaslavsky, Ding, & Ayanian, 2009). Another study found that older adults engage in less emotional eating than younger adults do (Tsenkova et al., 2013). Older adulthood, compared with early and middle-aged, is a unique period in the life course associated with increased emotional regulation and greater overall life satisfaction, which may promote healthier functioning and more positive coping mechanisms (Lachman, Teshale, & Agrigoroaei, 2015).

Gender differences with emotional eating have also been observed. Prior research has found that emotional eating is more common among women when compared to men (Chao et al., 2016; Opwis et al., 2017). Stress is associated with binge eating, and women are more likely to binge eat as a result of stress (Cotter & Kelly, 2018; Rosenbaum & White, 2015). A recent study found that emotional eating served as a protective and buffering mechanism for women by altering the perception of stress (Finch & Tomiyama, 2015).

Finally, BMI is also associated with the tendency to use food to cope (i.e. emotionally eat). Individuals with normal and overweight BMIs were found to have a higher likelihood of engaging in emotional eating as a result of stress

(Wilson et al., 2015). Cotter and Kelly (2018) found that stressful life events and psychosocial strain were associated with a higher BMI. Furthermore, individuals with a higher BMI score, such as those diagnosed with obesity, are more likely to engage in emotional eating when impacted by stressful events (Cotter & Kelly, 2018).

Caregiving and emotional eating

The Escape Theory postulates that individuals engage in negative or self-defeating behaviors to escape from negative affect and unpleasant situations (Heatherton & Baumeister, 1991). Family caregivers may engage in negative health behaviors, such as emotional eating, to cope with the strain of providing care (Park & Iacocca, 2014). The daily caregiving demands and cumulative burden may lead caregivers to appraise their situation as stressful and then seek a means to alleviate associated negative perceptions. Poor coping behaviors such as, alcohol consumption, decreased exercise, and emotional eating may emerge as the aggregate results of primary (i.e. stressors directly related to caregiving demands) and secondary stressors (i.e. stressors that arise from the primary stressors, such as family and financial strain; Aneshensel, Pearlin, Mullan, Zairt, & Whitlach, 1995). Caregivers often neglect their own needs and exhibit less self-care when putting the needs of their care recipient before their own (Applebaum, Farran, Marziliano, Pasternak, & Breitbart, 2014). Additionally, the quality of social support, such as those found in families, is associated with physical and mental health outcomes for caregivers (Haley, Levine, Brown, & Bartolucci, 1987).

Mediating role of family strain

One secondary stressor, family strain, may mediate or account for the associations between caregiver characteristics (i.e. age, gender, and BMI) and the tendency to engage in emotional eating. Family strains (e.g. demanding, conflicted relationships) affect the interactions among caregivers and their family members, which can then influence maladaptive coping mechanisms (Li, Shaffer, & Bagger, 2015). Family interactions that are critical, overbearing, or hostile are distressing and may contribute to a reliance on poorer coping mechanisms (Li et al., 2015; MacDougall & Steffen, 2017). Although caregiver characteristics such as age and gender may put caregivers at risk of engaging in emotional eating (Opwis et al., 2017; Tsenkova et al., 2013), we expect that family strain will mediate these associations given that exposure to family strain also varies by caregiver characteristics.

Although family members can serve as support mechanisms for caregivers, they can also be sources of strain which can have negative impacts on caregiver functioning. Compared to young adults, older adults are less likely to engage in interpersonal arguments and report experiencing less interpersonal related stressors (Birditt, 2014). Luong and Charles (2014) posit that as an individual's age increases, their ability to effectively handle conflict also increases. Additionally, women tend to take on the responsibility of maintaining family relationships and thus typically report more family strain compared to men (Evans et al., 2016). A previous study found that family conflict mediated the relationship between the care recipient's

mental impairment and caregiver strain (Scharlach, Li, & Dalvi, 2006), yet an understanding of the process by which family strain is associated with emotional eating for informal caregivers is not well understood. This source of strain can not only exacerbate emotional eating but also serve as a mechanism that explains the relationship between a caregiver's age, gender, and BMI with emotional eating.

Prior research also found an association between family strain and weight gain among women (Block et al., 2009), whereas more recent findings show significant associations between family strain and BMI for both men and women (Cotter & Kelly, 2018). The purpose of this study was to examine several pathways to help explain the link between caregiver characteristics and emotional eating. We expect that family strain will mediate or explain the associations between family caregiver characteristics and emotional eating. Mediation models can explore the effect of the mediator on the dependent variable and the direct effect of the independent variable on the dependent variable when controlling for the mediator (Baron & Kenny, 1986).

The present study

Given that caregivers are at risk of engaging in poor health behaviors to cope with the strains and unpleasant emotions related to caregiving, this study uses data from family caregivers to examine the correlations between caregiver characteristics (i.e. age, gender, and BMI) and emotional eating. An additional aim of this study was to ascertain the extent to which family strain mediated the relationship between these associations, even after accounting for caregiver demographic variables. Specifically, we hypothesized that:

1. Caregivers who are younger, female, and who have higher BMI will engage in more emotional eating (Hypothesis 1).
2. Younger, female caregivers, and those with a higher BMI will report greater family strain (Hypothesis 2).
3. Family strain will be significantly associated with emotional eating (Hypothesis 3).
4. Family strain will mediate the associations between caregiver characteristics (e.g., age, gender, BMI) and emotional eating (Hypothesis 4).

Method

Participants

This study uses data from the third wave of the longitudinal National Study of Midlife in the United States (MIDUS 3) collected in 2013 ($N = 3294$). The analytic sample includes participants who identified as family caregivers ($n = 326$). Participants were originally randomly selected via a nationally representative random-digit phone dialing. Data was collected from the follow-up wave using phone interviews and paper and pencil questionnaires.

Characteristics of the sample

On average, participants were 62.88 years old ($SD = 10.28$, range = 42–92). Most care recipients were female (58.8%).

Table 1. Demographic characteristics ($n = 326$).

| | <i>n</i> | Percent | Mean (SD) |
|-------------------------------|----------|---------|---------------|
| Age | | | 64.27 (10.14) |
| Income | | | |
| 0–\$24,999 | 101 | 35.1% | |
| \$25,000–\$49,999 | 84 | 29.2% | |
| \$50,000–\$99,999 | 73 | 25.3% | |
| \$100,000 or more | 30 | 10.4% | |
| Gender | | | |
| Men | 99 | 30.4% | |
| Women | 227 | 69.6% | |
| Race | | | |
| Caucasian | 283 | 87.6% | |
| Black/African American | 14 | 4.3% | |
| Other | 26 | 8.1% | |
| Marital status | | | |
| Married | 214 | 65.8% | |
| Single/never married | 30 | 9.2% | |
| Widowed | 39 | 12% | |
| Divorced | 39 | 12% | |
| Separated | 3 | .9% | |
| Education | | | |
| High school degree or less | 89 | 27.5% | |
| Some college/technical school | 99 | 30.6% | |
| College graduate | 64 | 19.8% | |
| Graduate school | 72 | 22.2% | |

Percentages do not equal 100 due to missing data.

Time spent caregiving varied with most caregivers reporting spending 20 or fewer hours a week caregiving (63.6%), whereas almost a quarter of respondents reported spending between 21–60 h a week. Most caregivers reported providing assistance to their mother (22.4%). In this sample, nearly 15% of respondents were caregiving for a son or daughter with a disability. Just over half of the care recipients resided with the caregiver. Half of the respondents reported providing activities of daily living (ADL) support (e.g. bathing, dressing, eating, bathroom), and 65% indicated giving functional transfer assistance. The majority of caregivers (80%) provided instrumental activities of daily living (IADL) assistance (e.g. housework, shopping, medication management).

Measures

Sociodemographic characteristics

Respondents reported their date of birth, highest level of education completed, gender, total household income, marital status, and race. Table 1 presents the demographic characteristics of the participants. Age (continuous) and gender (recoded as 0 = male and 1 = female) were used as primary variables of focus.

Caregiver status

Caregiving status was ascertained by asking the following question: During the last 12 months have you, yourself, given personal care for a period of one month or more to a family member or friend because of a physical or mental condition, illness, or disability? Respondents who answered 'yes' then identified to whom they were providing care.

Family strain

Family strain was a composite scale consisting of four questions answered on a 4-point scale ranging from 1 (*often*) to 4 (*never*). Questions included: Thinking about the members of your family, not including your spouse/partner, how often: 'do they make too many demands on you?', 'do

Table 2. Correlations among caregiver characteristics and primary variables.

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---------------------|-------------------|---------|----------|----------|----------|-------|---|
| 1. Gender | | | | | | | |
| 2. Body Mass Index | -.055** | | | | | | |
| 3. Family Strain | .074*** | .084*** | | | | | |
| 4. Emotional Eating | .238*** | .303*** | .187*** | | | | |
| 5. Income | -.365*** | -.016 | -.003 | -.076*** | | | |
| 6. Race | 6.54 ^a | .005 | .052** | -.002 | -.007 | | |
| 7. Age | -.004 | -.061** | -.214*** | -.102*** | -.197*** | -.007 | |

The correlations between family strain and emotional eating, family strain and age, and emotional eating and age (i.e. continuous variables) represent Pearson correlations. All other correlations between continuous and categorical variables and between categorical variables represent Spearman's rho correlations.

** $p < .01$, *** $p < .001$.

^aThe association between these two nominal categorical variables represents a χ^2 .

they criticize you?', 'do they let you down when you are counting on them?', 'do they get on your nerves?'. The scale was reverse-coded, so higher scores reflect higher family strain ($M = 2.00$, $SD = .66$; $\alpha = .80$).

Emotional eating

Emotional eating was a composite scale consisting of two questions answered on a 4-point scale ranging from 1 (*a lot*) to 4 (*not at all*). Questions included: 'I eat more than I usually do' and 'I eat more of my favorite foods to make myself feel better.' Responses to the two items were reverse coded and summed so that higher scores indicated greater use of food in response to stress ($M = 3.94$, $SD = 1.90$).

Body mass index

Participants were asked to report their height and weight which were calculated into a BMI score for each participant. For ANCOVA analysis, BMI was recoded into a categorical variable according to classifications by the National Heart, Lung, and Blood Institute (Cotter & Kelly, 2018). A BMI less than 18.5 was considered 'underweight,' a BMI between 18.5 and 25 was considered 'normal weight,' a BMI between 25 to 29.99 was considered 'overweight,' and a BMI of 30 or greater was considered 'obese' ($M = 28.51$, $SD = 6.44$; range = 16.62 – 54.88).

Analysis strategy

Associations have been found between age, gender, educational attainment, income, and BMI with stress (Cotter & Kelly, 2018). Although the MIDUS data did not directly assess caregiver stress, respondents did provide data on their negative affect, which represents respondents' negative emotional experiences. Respondents indicated the degree to which they felt 12 negative emotions during the past 30 days on a scale ranging from 1 (*all of the time*) to 5 (*none of the time*). In order to first establish that caregivers are experiencing more negative emotions than their non-caregiving counterparts, we conducted independent *t*-tests comparing caregivers to their same-aged non-caregiver peers. As anticipated, caregivers reported significantly higher negative affect ($M = 1.57$, $SD = .60$) compared to their non-caregiving peers ($M = 1.48$, $SD = .53$, $t(2686) = 2.834$, $p < .01$). After establishing that caregivers reported

higher negative affect, we focused the remainder of our analyses on only those who reported providing care.

Next, we examined the correlations between caregiver characteristics, family strain, and emotional eating. The correlations between continuous variables, including the associations between family strain and emotional eating, family strain and age, and emotional eating and age represent Pearson correlations, whereas all other correlations represent Spearman's rho correlations. Results revealed that age, gender, and BMI, were significantly associated with family strain and emotional eating. ANCOVA analyses were used to explore BMI differences in emotional eating among caregivers after controlling for age and gender. SPSS PROCESS macro was used to test family strain as a potential mediator between demographic variables and emotional eating. We used 5000 bootstrap samples to create 95% bias-corrected and accelerated (BCa) confidence intervals to test the significance of indirect effects. Indirect effects are significant at $p < .05$ if the 95% BCa confidence intervals do not include zero. Linear regression and independent *t*-tests were conducted when applicable. This mediation procedure tested whether Condition A (caregiver characteristics) had a direct effect on the outcome variable (emotional eating) and on the mediator (family strain). Then, condition B tested the effect from the mediator (family strain) on the outcome variable (emotional eating). Lastly, condition C examined the associations between characteristics and the outcome variable (emotional eating) after controlling for the mediator (family strain), requiring a drop of the significant total effect between the predictors and outcome.

Results

Table 2 presents the bivariate correlations between demographic characteristics, family strain, and emotional eating. Body mass index (BMI) was significantly positively associated with emotional eating, where higher BMI was associated with a greater tendency to engage in emotional eating. Family strain and gender were positively correlated with emotional eating. Caregivers who experience greater family strain are also more likely to engage in emotional eating. Age was negatively correlated with emotional eating; older adults were less likely to engage in emotional eating.

Individual differences in emotional eating

An independent sample's *t*-test revealed that female caregivers ($M = 4.27$, $SD = 2.02$) were more likely than male caregivers ($M = 3.18$, $SD = 1.38$) to engage in emotional eating; $t(332) = -4.10$, $p < .0001$. A one-way ANCOVA was conducted to compare the differences among BMI and the proclivity to engage in emotional eating after controlling for age and gender. There was a significant difference in the propensity to use food to cope between the BMI categories ($F(3,321) = 14.37$, $p < .0001$). Bonferroni post hoc tests showed there was a significant difference between underweight caregivers and those who were obese ($p < .05$). Additionally, caregivers with a normal BMI significantly differed from those who were overweight ($p < .05$) and those who were obese ($p < .0001$). Finally, caregivers in the overweight BMI category significantly differed from obese caregivers ($p < .01$). Comparing the estimated

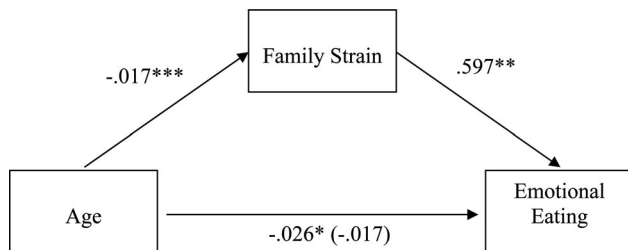


Figure 1. Standardized regression coefficients for the relationships between age and emotional eating as mediated by family strain. The standardized regression coefficient between age and emotional eating, controlling for family strain, is in parentheses. * $p < .05$; ** $p < .01$; *** $p < .001$.

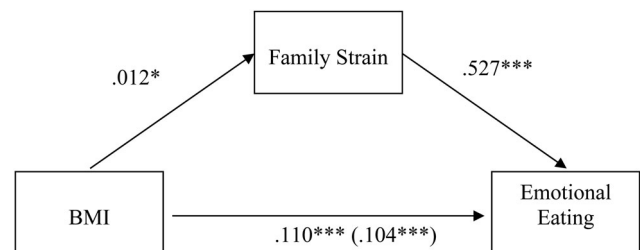


Figure 2. Standardized regression coefficients for the relationships between BMI and emotional eating as mediated by family strain. The standardized regression coefficient between BMI and emotional eating, controlling for family strain, is in parentheses. * $p < .05$; ** $p < .01$; *** $p < .001$.

marginal means showed that obese caregivers ($M = 4.68$) were the most likely to engage in emotionally eating compared with underweight ($M = 2.35$), normal ($M = 3.16$), and overweight caregivers ($M = 3.88$).

Mediating role of family strain

Age

Mediation analysis was used to explore whether family strain mediated the relationship between age and emotional eating. We used a percentile bootstrap estimation approach with (5000) samples, implemented with the PROCESS macro Version 3 (Hayes, 2017). Results indicated that family strain significantly mediated the association between caregiver age and emotional eating (Figure 1). Age was negatively associated with family strain suggesting that younger caregiver age was predictive of increased family strain ($p < .001$) and more emotional eating ($p < .05$).

Gender

An independent sample's t -test revealed that female caregivers ($M = 2.03$, $SD = .66$) were statistically similar to male caregivers ($M = 1.95$, $SD = .68$) in their experience of family strain; $t(324) = -1.034$, $p > .05$. Next, we tested whether family strain mediated the relationship between gender and emotional eating. Results indicated that gender was not significantly associated with family strain ($p = .30$), which did not satisfy the test for mediation. Although gender was not significantly associated with family strain, linear regression analysis was used to test if gender was associated with emotional eating. Results indicated that gender was significantly associated with emotional eating ($R^2 = .07$, $F(1,332) = 24.99$, $p < .0001$). Female caregivers were more likely to use food to cope.

BMI

We were also interested if family strain mediated the relationship between BMI and emotional eating. Results can be found in Figure 2. We found that, after controlling for family strain as a mediator, higher BMI was still significantly associated with emotional eating, ($R^2 = .18$, $p < .0001$). This suggests that BMI is a strong predictor of emotional eating for family caregivers regardless of present family strain.

Discussion

In this study, we constructed a mediation effect model (with family strain as the mediator) to assess the

relationships between caregiver characteristics and emotional eating. Results of this study indicated that family strain was significantly associated with emotional eating for informal caregivers. We also found that younger caregiver age was associated with greater family strain and greater propensity to engage in emotional eating. However, the results suggest that the effects of age on emotional eating were fully mediated by family strain for caregivers. Family strain may help explain younger caregivers' proclivity to engage in negative coping behaviors, such as emotional eating.

Positive social relationships, such as those found in families, are associated with enhanced wellbeing and a better ability to cope with stressful situations (Benson, 2016). However, interpersonal relationships, such as families, can also serve as sources of stress (Li et al., 2015). Family demands and criticisms are associated with negative individual health outcomes and wellbeing which can be problematic for caregivers (Evans et al., 2016). Results also revealed that female caregivers were more likely to engage in emotional eating when compared to their male counterparts. Furthermore, we found that the association between higher BMI and emotional eating was not mediated by family strain. Our results suggest that younger, overweight, female caregivers may be at particular risk of using food to cope with the demands of caregiving and poor interpersonal dynamics. Because informal caregiving is considered a chronic stressor, investigations that examine the associations between caregiving and emotional eating are critical to better understand specific risks factors for informal caregivers.

Individual caregiving differences in emotional eating

Age

The results of this study suggest that older adulthood may be associated with the improved ability to regulate daily experiences that promotes more positive eating habits. Previous research has found that older adults, when compared to younger adults, are less likely to assess social situations negatively (Birditt, 2014; Luong & Charles, 2014). We found that younger caregiver age was associated with family strain, which is consistent with prior research suggesting that older caregiver age is linked to better family functioning (Litzelman et al., 2016). Younger caregivers may be coping with more family strain such as those associated with juggling multiple family roles and responsibilities (e.g. spouse/partner, parent, employee, caregiver).

Consistent with previous research (Tsenkova et al., 2013), we also found that younger age was associated with

a greater tendency to engage in emotional eating. Varying contextual and structural factors dictate the types and frequencies of experienced stressors across the life course, which will impact an individual's engagement in various coping strategies (Heatherton & Baumeister, 1991). Carstensen et al. (1999) argue that individuals improve emotion regulation strategies across the lifespan, which may account for these age differences in coping strategies.

Furthermore, the results of this study showed that age differences in emotional eating can be explained by family strain, which may represent a mechanism that links age and emotional eating. These results support the socioemotional selectivity theory suggesting that older adults may choose to focus on more positive experiences (Carstensen, Isaacowitz, & Charles, 1999). Because older adults have had to navigate through interpersonal relationships longer, they are more socially experienced and more likely to disengage during conflict (Luong & Charles, 2014). Interventions targeted at managing family strain, particularly for younger caregivers, could improve coping and decrease poor coping behaviors. Consequently, respite services for younger caregivers that assist in alleviating some of the hassles of family strain are warranted.

Gender

Ample research has examined the role that gender plays in the heterogeneity of family dynamics and caregiving, yet little attention has been given to family strain specifically. Women's likelihood of balancing multiple family processes while simultaneously providing caregiving assistance puts females at risk of experiencing criticism, arguments, and demands from family members (Litzelman et al., 2016). However, results from this study suggest that male caregivers experience similar rates of family strain. Our results suggest that although family and caregiving responsibilities may be more salient to female identities, male and female caregivers experience family strain similarly and would benefit from resources to improve family communication and functioning.

We found that female caregivers, compared to males, were more likely to engage in using food to cope. This suggests a need for resources and education that promote healthier coping mechanisms for females. Recent societal trends (e.g. delayed childbirth, entrance into workforce, educational attainment) have resulted in a multitude of women finding themselves stretched among multiple responsibilities. Women often simultaneously balance work and family related stressors on top of caregiving related duties (Evans et al., 2016). Maintaining health and well-being may be particularly challenging for female caregivers when considering the associated primary subjective stressors, such as role overload, combined with secondary stressors (e.g. family strain; Aneshensel et al., 1995; Evans et al., 2016). Therefore, role balance strategies and tactics to manage and reduce family strain may be especially helpful for female caregivers.

BMI

Similar to a growing body of research, this study also found evidence of an association between BMI and engagement in emotional eating (Cotter & Kelly, 2018;

Wilson et al., 2015). Our results revealed that caregivers with a higher BMI were more likely to engage in using food to cope compared with 'normal' or 'underweight' caregivers. It is conceivable that compared to overweight and obese caregivers, caregivers with a 'normal' BMI may use healthier means to cope with demands and negative emotions of caregiving, such as exercise. Greater perceived stress, such as with family strain, coupled with BMI may contribute to emotional eating for informal caregivers.

We found that, after controlling for family strain, BMI was still associated with emotional eating among caregivers. Our results suggest that BMI, compounded by the caregiving experience, is related to family strain and emotional eating. These associations suggest a serious need for intervention efforts. Given the prevalence of obesity in America coupled with the risks associated with informal caregiving, this study addresses a major gap in the literature. However, this study is not without its limitations.

Limitations and future directions

One of the limitations of this study is the use of a cross-sectional design and the inability to discern cause. Additionally, the lack of diversity in this sample is a limitation. Most participants identified as Caucasian females which underscores the need for future research to explore diversity within the caregiving experience and its associations with emotional eating. Additionally, because secondary data was used, the 'family strain' variable does not specifically identify which particular family members are the cause of this stressor, which limits our understanding of these family characteristics. Future research that examines causality would greatly advance the understanding of family strain within the context of informal caregiving and its relation to emotional eating. Furthermore, although associations found suggest that caregiving is associated with emotional eating, given the nature of this dataset, we cannot definitively ascertain that emotional eating is in response to caregiving. Further, although caregiving is consistently associated with increased stress (Hsiao, 2018), the MIDUS data does not include a measure of caregiver stress or burden per se. Therefore, we cannot say definitively that caregivers in our sample are experiencing stress in their caregiver role. We did find evidence, however, that compared to their non-caregiver same-aged peers, our caregivers reported higher negative affect, which suggests caregivers in our sample were experiencing heightened negative emotions.

A major strength of this study is the examination of the relation between demographic factors and emotional eating after considering the influence of family strain. This study focuses on an important gap in the literature and raises new questions for future research. Further inquiry might examine how emotional eating fluctuates on a daily basis and its relation to family strain. This study provides insight and adds to the current caregiving literature by exploring how the context and background of caregiving are correlated with family strain and behavioral outcomes. Further investigation into the topic can assist in the development of interventions that promote healthy coping behaviors and increase family functioning.

A greater understanding of coping behaviors associated with informal caregiving, specifically emotional eating, can assist interventionists in the development of behavior change modules that incorporate tools to strengthen positive family relationships. Outcomes and wellbeing may be improved for caregivers when interventions focus on family dynamics. Educating caregivers on coping resources and increasing these resources can decrease the likelihood of caregivers using food to cope with the demands and negative emotions associated with caregiving (Wilson et al., 2015). Interventionists should consider strategies that adopt a multidimensional framework for assisting caregivers. Future research should continue to examine the multifaceted relationships between caregiving, family strain, and emotional eating. Family system's theory-based interventions that target the family as a unit and consider overall family dynamics in relation to caregiving stress may prove beneficial to decrease emotional eating. These findings underscore the importance of considering caregiver characteristics when helping caregivers cope with the demands of providing assistance with the consideration of family strain.

Disclosure statement

The authors declare that there is no conflict of interest.

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