



# Self-Compassion, Internalized Weight Stigma, Psychological Well-Being, and Eating Behaviors in Women

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## Abstract

**Objectives** Research suggests that directing compassion inward (i.e., self-compassion) is related to better psychological and physical well-being. Little research attention has focused on the links between self-compassion and internalized weight stigma. Internalized weight stigma, or devaluing oneself because of one's body weight, is pervasive across women regardless of their weight and is particularly detrimental to psychological and physical well-being.

**Methods** This study examined the indirect effects of self-compassion on maladaptive eating behaviors through lower levels of internalized weight stigma and increased psychological well-being in a sample of 266 women. Women completed an online questionnaire assessing self-compassion, internalized weight stigma, anxiety and depressive symptoms, and emotional and restrained eating.

**Results** Self-compassion was associated with lower levels of internalized weight stigma, which in turn was associated with fewer depressive symptoms and less anxiety. Contrary to expectations, self-compassion was not associated with eating behaviors through the sequence of internalized weight stigma and psychological well-being. However, self-compassion was associated with less emotional and restrained eating through lower internalized weight stigma.

**Conclusions** The link between self-compassion and fewer maladaptive eating behaviors was explained by internalized weight stigma alone, as opposed to a sequence of internalized weight stigma and psychological well-being.

**Keywords** Self-compassion · Internalized weight stigma · Psychological well-being · Emotional eating · Restrained eating

Self-compassion is the ability to direct compassion inward during times of stress and personal failure (Neff 2003a). It is comprised of three components, including self-kindness, common humanity, and mindfulness (Neff 2003b). Self-kindness involves the ability to be kind and understanding of oneself during times of perceived failure or painful situations. Having a sense of common humanity means that one can understand that their negative experience is not unique or limited to themselves but is part of the larger

human existence and is shared by many. Finally, mindfulness involves in-the-moment, nonjudgmental awareness of one's thoughts and feelings without overidentifying with, exaggerating, or suppressing them (Neff 2003b). Self-compassion is associated with a variety of positive psychological and physical health outcomes (MacBeth and Gumley 2012; Sirois et al. 2015), including lower depression, negative affect, anxiety, and stress (MacBeth and Gumley 2012; Zessin et al. 2015), as well as better dietary and exercise behaviors, fewer body image concerns, and less eating-related guilt (Sirois et al. 2015; Wasylikiw et al. 2012). A recent meta-analysis revealed that women might have less self-compassion than men (Yarnell et al. 2015). This may be because women are socialized to be nurturers and caregivers rather than care recipients (Taylor 2006). As such, women may be able to direct compassion towards others during times of stress but not towards themselves (Yarnell et al. 2015).

A paucity of research examines the role of self-compassion in the context of weight stigma. Weight stigma is pervasive

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across the United States as Western culture emphasizes the *thin and fit* ideal or the cultural norm that in order to be attractive, women should be slim and muscular (Bozsik et al. 2018). Attitudes regarding the ideal body type are widespread and rarely challenged, which makes all women, but especially women with heavier weight, vulnerable to prejudice and discrimination regarding their weight status (Puhl and Heuer 2009). In fact, there is some evidence that weight discrimination occurs almost as frequently as race, gender, or age discrimination (Puhl et al. 2008). Women who are exposed to stereotypes about ideal body types or who experience weight stigma or discrimination regarding their own weight may internalize their experiences, evaluate themselves negatively, and come to believe negative stereotypes about overweight and obesity (Pearl and Puhl 2018; Puhl et al. 2018).

Internalized weight stigma may be a stronger predictor of adverse health outcomes than weight discrimination (Pearl and Puhl 2016). Although internalized weight stigma occurs across gender and weight, it occurs more frequently in women and is positively correlated with BMI (Boswell and White 2015). Women may internalize weight stigma more easily than men because they are more likely to cope with weight stigma using negative emotions (Himmelstein et al. 2017). Research has consistently found a link between internalized weight stigma and increased psychological distress (Durso and Latner 2008). For example, in a sample of non-treatment-seeking adults with heavier weight, internalized weight stigma was related to lower self-esteem and increased depression and anxiety (Durso and Latner 2008; Hilbert et al. 2014). Additionally, in a community sample of higher-weight women, internalized weight stigma was associated with poorer emotional and physical quality of life (Latner et al. 2014).

Internalized weight stigma has also been associated with body image concerns and maladaptive eating behaviors such as emotional and restrained eating (Devonport et al. 2019; Durso et al. 2012; O'Brien et al. 2016). Emotional eating is a tendency to overeat in response to an affective state (Macht 2008; van Strien and Ouwens 2007). Over time, emotional eating can become a learned behavior that is used to control negative emotions, and individuals may eventually be unable to distinguish between hunger cues and negative emotional states (van Strien et al. 2012). Emotional eating in response to stress or negative emotions involves increased food intake, especially unhealthy foods that are high in fat and sugar (Konttinen et al. 2010; Schvey et al. 2011).

In contrast, restrained eating occurs when individuals intentionally restrict their food intake. Restrained eaters have a tendency to regulate their food intake by adhering to a set of rules, while unrestrained eaters regulate their food intake by responding to internal hunger and satiety cues (Herman and Polivy 1984). Individuals who restrain their eating behaviors

are less sensitive to physiological cues of hunger and overeat when cognitive control is undermined, or individuals experience stress or negative mood states (Cools et al. 1992; Herman and Mack 1975). Restrained eating is hard to maintain and often leads to disinhibition when eating, a higher frequency of binge eating, and greater consumption of unhealthy foods (Drapeau et al. 2003; Holmes et al. 2014). Compared to men, women, in particular, may experience more body dissatisfaction and engage in more restrained eating when exposed to media and cultural standards promoting thinness and stigmatizing obesity (Ferguson 2013; Irving and Neumark-Sztainer 2002).

Although self-compassion and internalized weight stigma have been independently associated with both psychological well-being and eating behaviors, little research has examined the possibility that the links between self-compassion and maladaptive eating behaviors like emotional and restrained eating might be explained by a sequence of internalized weight stigma and psychological well-being. Self-compassion may provide women with the intrapersonal resources needed to reduce the internalization of adverse weight-related events. One way that weight stigma becomes internalized is when individuals attach too much value and judgment to body size and weight (Ratcliffe and Ellison 2015). Self-compassion may help to reduce internalized weight stigma and maladaptive eating behaviors through the reduction of self-criticism and increase in self-soothing (Ratcliffe and Ellison 2015). Self-compassion may also allow individuals to acknowledge and accept the negative emotions associated with weight stigma without overidentifying and attaching value to any internal judgments about their body size and weight (Wong et al. 2019). Finally, self-compassion may help women feel less socially isolated and lonely when they experience real or perceived interpersonal rejection related to their weight, including being teased, belittled, or patronized (Major 2012; Rotenberg et al. 2017). Taken together, this research suggests that self-compassion may be a resource that helps prevent negative weight-based experiences from becoming internalized.

The links between internalized weight stigma and maladaptive eating behaviors, in turn, may be explained by psychological distress. Numerous models of weight stigma acknowledge that the experience of weight stigma and internalized weight stigma activates negative moods and emotions (Ratcliffe and Ellison 2015; Tomiyama 2014). Individuals may engage in maladaptive eating behaviors as a way of “turning off” their negative mood (Macht 2008). For example, in a sample of adults at a residential weight-loss center, the relationship between weight stigma and increased binge eating behavior was reduced in magnitude once psychological distress was controlled for (Ashmore et al. 2008). This same pattern of results has been found for internalized stigma, such that the experience of weight stigma was related to higher

levels of internalized weight stigma, which was associated with increased psychological distress. Psychological distress, in turn, was associated with more disordered eating behaviors (O'Brien et al. 2016).

The overarching goal of the present study was to examine the links between self-compassion, internalized weight stigma, psychological well-being, and eating behaviors in a sample of women. The first hypothesis of this study was that the indirect effect of self-compassion on lower levels of emotional and restrained eating would be explained by the sequence of internalized weight stigma and psychological well-being. Specifically, we expected that higher levels of self-compassion would be associated with lower levels of internalized weight stigma. Lower internalized weight stigma would be associated with fewer depressive symptoms and less anxiety. Lower depressive symptoms and anxiety would then, in turn, be associated with lower levels of emotional and restrained eating. Our second hypothesis examined the indirect effects of self-compassion on emotional and restrained eating through the individual mediator variables. We expected that the links between self-compassion and less emotional and restrained eating would also be explained by lower levels of internalized weight stigma alone, lower depressive symptoms alone, and less anxiety alone. Our third hypothesis was that the indirect effect of self-compassion on emotional and restrained eating through the sequence of internalized weight stigma and psychological well-being would be stronger than the indirect effect of self-compassion on emotional and restrained eating through any of the individual mediators alone.

## Method

### Participants

This study is from a larger data set examining women's weight-related experiences and emotions. To be eligible for the study, participants had to be at least 18 years old and could not have been diagnosed with an eating disorder or pregnant. Of the 278 women who completed the study, 21 were removed because they did not provide their weight and height yielding a final sample of 267. One additional woman was removed because her BMI was 13.08, which is considered severely underweight. This was likely due to an error in self-reported weight.

Women in the study were, on average, 31.17 years of age (SD = 13.7, range = 18–74), and the majority were non-Hispanic White (86.8%), followed by Hispanic (5.3%), Asian (3.0%), Black/African America (3.0%), and Multiracial/Other (1.9%). About half of the women had a college degree (42.9%), and the other half had some college (48.1%) or a high school diploma (9.0%). The median annual income was \$40,000 to \$59,999. The average BMI of women

was 28.04 (SD = 8.3, range = 16.99 – 63.85). Approximately one-third of women in the current sample scored ten or above on the CES-D (38.0%), and one-fourth scored 43 or above on the STICSA (27.1%), which are cut-off scores for being at risk for clinical depression and anxiety disorders (Andersen et al. 1994; Van Dam et al. 2013).

### Procedures

The study was reviewed and determined to be exempt from IRB review by the Institutional Review Board at the university where the study was conducted. A convenience sample of women was recruited using an undergraduate psychology subject pool, snowball sampling, and social media outlets including Facebook and Twitter. Interested and eligible participants completed informed consent and an online survey, and every 10<sup>th</sup> participant was awarded a \$20.00 gift card. Data were collected in February and March of 2016.

### Measures

#### Self-Compassion

Self-compassion was assessed with the Self-compassion Scale-Short Form (SCS-SF; Raes et al. 2011). Participants rated 12 items (e.g., "I try to be understanding and patient towards those aspects of my personality I don't like") on a scale from 1 *almost never* to 5 *almost always*. Negative items were reverse-scored, and items were averaged to create a mean score, with higher scores reflecting more self-compassion. The mean amount of self-compassion was 2.86 (SD = .73; range = 1–4.83,  $\alpha = .86$ ).

#### Internalized Weight Stigma

Internalized weight stigma was measured with the Weight Bias Internalization Scale-Modified (WBIS-M; Pearl and Puhl 2014). This measure was modified from the original Weight Bias Internalization Scale (Durso and Latner 2008) to measure internalized weight attitudes across individuals of all weight statuses. Participants responded to 11 items (e.g., "I feel anxious about my weight because of what people may think of me) on a scale from 1 *strongly disagree* to 7 *strongly agree*. Positive items were reverse-scored, and items were averaged with higher scores reflecting more internalized weight stigma. Women's mean internalized weight stigma was 3.54 (SD = 1.63; range = 1–6.82,  $\alpha = .95$ ).

#### Depressive Symptoms

Depressive symptoms were measured with the 10-item Center for Epidemiologic Studies Depression Scale-Revised (CESD-R 10; Björngvinsson et al. 2013). Participants indicated if they

had experienced depressive symptoms (e.g., “I was bothered by things that usually don’t bother me”) over the past week on a scale from 0 *rarely or none of the time* to 3 *all of the time*. Positive items were reverse-scored, and items were summed to create a total scale score with higher scores indicating higher depressive symptomatology. The mean depressive symptoms were 8.99 (SD = 5.7; range = 0–26,  $\alpha = .84$ ).

### Anxiety

Anxiety was assessed using the state version of the 21-item State-Trait Inventory for Cognitive and Somatic Anxiety (STICSA; Grös et al. 2007). Participants indicated how they felt over the past month (e.g., “I worry that I cannot control my thoughts as well as I would like to”) on a scale from 1 *not at all* to 4 *very much so*. Items were summed with higher scores indicating greater anxiety. In the present study, the mean level of anxiety reported was 36.17 (SD = 10.3; range = 21–68,  $\alpha = .90$ ).

### Emotional Eating

Emotional eating was assessed using the revised version of the Emotional Eating Scale (EES-R; Koball et al. 2012). Twenty-five items measured participants’ urge to eat in response to a variety of emotions including depression (e.g., “sad, blue”), anxiety (e.g., “upset, worried”), anger/frustration (e.g., “furious, irritated”), and boredom (e.g., “restless, unstimulated”) on a scale of 1 *no desire to eat* to 5 *an overwhelming urge to eat*. Scores were summed, and higher scores reflected greater urges to engage in emotional eating. The mean level of emotional eating in the current study was 57.35 (SD = 21.3; range = 25–115,  $\alpha = .96$ ).

### Restrained Eating

Restrained eating was measured using the 10-item restrained eating subscale of the Dutch Eating Behavior Questionnaire (van Strien et al. 1986). Participants indicated how much they restricted or avoided food (e.g., “When you have put on weight, do you eat less than you usually do?”) on a scale of 1 *never* to 5 *very often*. Items were summed, and higher scores reflected higher levels of restrained eating. Women’s mean restrained eating was 29.11 (SD = 8.6; range = 10–50,  $\alpha = .91$ ).

### Data Analyses

Covariates included several demographic variables that are consistently related to the mediators and outcome variables in the literature. Specifically, age, income, race, education, and BMI have all been associated with internalized weight stigma (Puhl et al. 2018). Age is a correlate of affective

disorders in pre-menopausal women (Faravelli et al. 2013), and BMI is consistently associated with both emotional and restrained eating (Konttinen et al. 2009). Table 1 presents the correlations among all study variables and the covariates. To aid in interpretation, race/ethnicity was dichotomized (i.e., White or Person of Color).

Serial mediation analysis using PROCESS version 3.4 for SPSS (Hayes 2017) was conducted to examine the hypotheses. Serial mediation allowed us to examine the indirect effect of self-compassion on maladaptive eating behaviors through (1) internalized weight stigma, (2) anxiety, (3) depressive symptoms, (4) the sequence of internalized weight stigma and anxiety, and (5) the sequence of internalized weight stigma and depressive symptoms. Indirect effects, rather than the total and direct effects, were used to examine the significance of each mediation model. The significance of indirect effects was established using bootstrapped confidence intervals, as they provide a more accurate and stable assessment of indirect effects in smaller samples (Preacher and Hayes 2004). The completely standardized indirect effect is reported because it is also a measure of the effect size of the indirect effect. Contrast tests were used to compare the magnitude of significant indirect effects.

## Results

### Links Between Self-Compassion, Internalized Weight Stigma, Psychological Well-Being, and Eating Behaviors

Our first hypothesis examined whether the sequence of internalized weight stigma and depressive and anxiety symptoms explained the links between self-compassion and restrained and emotional eating. As shown in Figs. 1 and 2, self-compassion was associated with lower levels of restrained and emotional eating. Consistent with our hypothesis, self-compassion was associated with less internalized weight stigma, and internalized weight stigma, in turn, was associated with more depressive symptoms and anxiety. However, inconsistent with our hypothesis, depressive symptoms and anxiety were not associated with emotional or restrained eating. Moreover, the indirect effects of self-compassion on emotional and restrained eating through the sequence of internalized weight stigma and depressive symptoms were not significant ( $IE_{CS} = .004$ ,  $SE = .008$ ,  $CI_{Bootstrap} = -.01$  to  $.023$  for emotional eating;  $IE_{CS} = .005$ ,  $SE = .009$ ,  $CI_{Bootstrap} = -.009$  to  $.03$  for restrained eating), and the indirect effects of self-compassion on emotional and restrained eating through the sequence of internalized weight stigma and anxiety were not significant ( $IE_{CS} = -.01$ ,  $SE = .01$ ,  $CI_{Bootstrap} = -.04$  to  $.004$  for emotional eating;  $IE_{CS} = -.003$ ,  $SE = .01$ ,  $CI_{Bootstrap} = -.03$  to  $.02$  for restrained eating).

**Table 1** Correlations between covariates and study variables

	1	2	3	4	5	6	7	8	9	10	11
1. Age	---										
2. Education	.38***	---									
3. Race/ethnicity	-.10	-.02	---								
4. Income	.20***	.14*	-.15*	---							
5. BMI	.23***	.08	-.05	-.03	---						
6. Self-compassion	.13*	.12*	.08	.08	-.21***	---					
7. Internalized weight stigma	.02	.02	-.06	-.09	.51***	-.60***	---				
8. Depression	-.19**	-.13*	.003	-.17**	.19**	-.59***	.45***	---			
9. Anxiety	-.18**	-.16*	-.08	-.11	.14*	-.56***	.43***	.79***	---		
10. Restrained eating	.14*	.20***	-.11	.04	.13*	-.25	.39***	.13*	.15*	---	
11. Emotional eating	.04	.02	-.10	.01	.33***	-.32	.41***	.24***	.27***	.21***	---

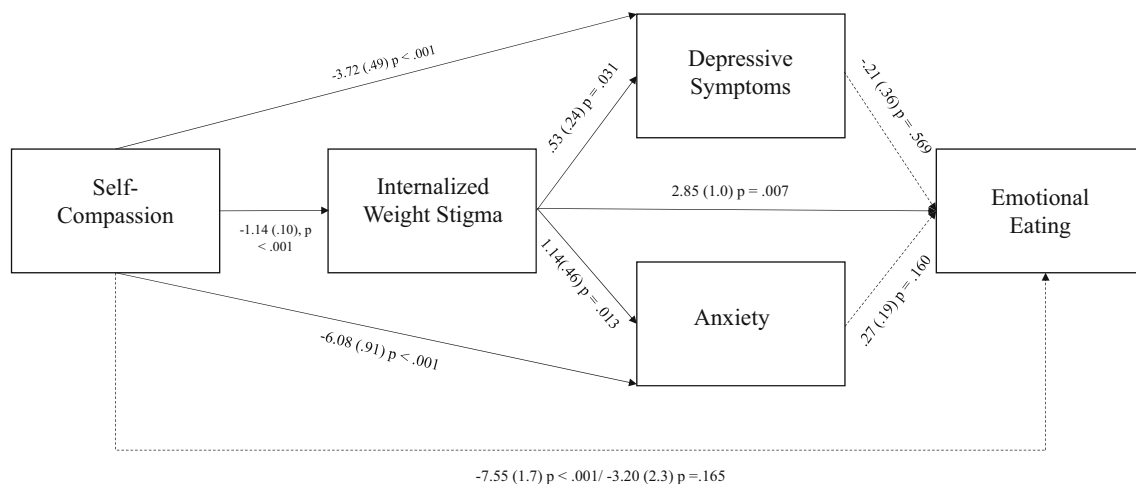
\*\*\* $p \leq .001$ ; \*\* $p \leq .01$ ; \* $p \leq .05$

Our second hypothesis examined the indirect effects of self-compassion on emotional and restrained eating through the individual mediators. As shown in Figs. 1 and 2, internalized weight stigma was positively associated with both emotional and restrained eating. Consistent with our hypothesis, the indirect effects of self-compassion on less emotional and restrained eating through lower levels of internalized weight stigma were both significant ( $IE_{CS} = -.11$ ,  $SE = .05$ ,  $CI_{Bootstrap} = -.20$  to  $-.02$  for emotional eating;  $IE_{CS} = -.22$ ,  $SE = .05$ ,  $CI_{Bootstrap} = -.32$  to  $-.14$  for restrained eating). However, inconsistent with our hypothesis, the indirect effects of self-compassion on self-compassion on emotional and restrained eating through depression ( $IE_{CS} = .03$ ,  $SE = .04$ ,  $CI_{Bootstrap} = -.06$  to  $.11$  for emotional eating;  $IE_{CS} = .03$ ,  $SE = .05$ ,  $CI_{Bootstrap} = -.06$  to  $.12$  for restrained eating) or anxiety ( $IE_{CS} = -.06$ ,  $SE = .04$ ,  $CI_{Bootstrap} = -.14$  to  $.02$  for emotional eating;  $IE_{CS} = -.02$ ,  $SE = .04$ ,  $CI_{Bootstrap} = -.10$  to  $.07$  for restrained eating) were not significant. Because only the

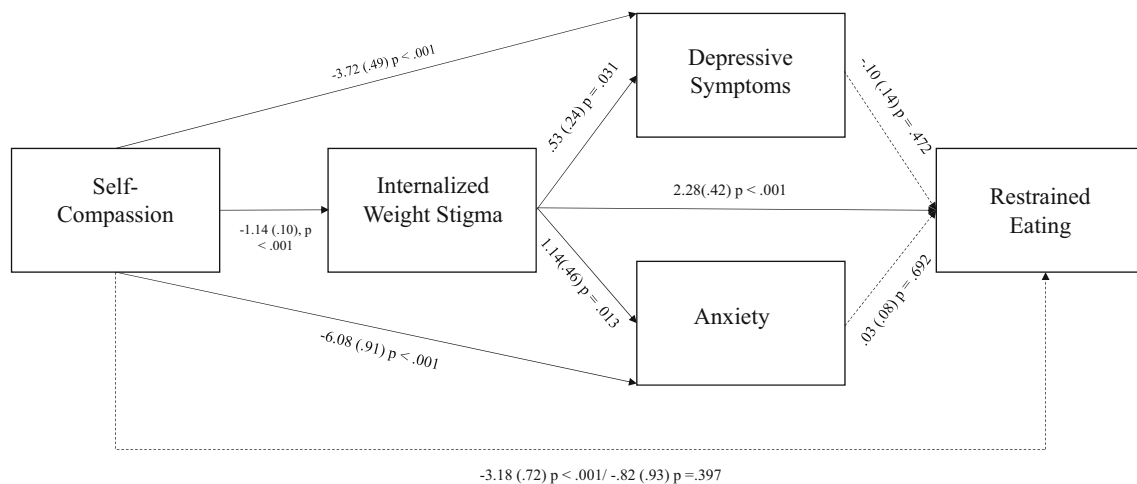
indirect effects of self-compassion on emotional and restrained eating through internalized weight stigma were significant, we did not test contrasts between the indirect effects. Thus, the third hypothesis was not supported. Finally, we conducted the analyses again to examine if the pattern of results remained the same after removing the covariates. No appreciable differences emerged in the models when the covariates were excluded.

### Post Hoc Analyses

Because our data are cross-sectional, alternative models may exist. For example, it is possible that there is a bidirectional relationship between self-compassion and internalized weight stigma. Therefore, we conducted a post hoc analysis to examine a serial mediation model where self-compassion and anxiety and depressive symptoms were serial mediators of the links between internalized weight stigma and emotional and



**Fig. 1** Links between self-compassion, internalized weight stigma, psychological well-being, and emotional eating. Note: solid lines depict significant paths, and dotted lines depict non-significant paths. This model controls for age, income, education, race/ethnicity, and BMI



**Fig. 2** Links between self-compassion, internalized weight stigma, psychological well-being, and restrained eating. Note: solid lines depict significant paths, and dotted lines depict non-significant paths. This model controls for age, income, education, race/ethnicity, and BMI

restrained eating. In the alternative model, internalized weight stigma was associated with less self-compassion ( $b = -.29$ ,  $SE = .03$ ,  $p < .001$ ) and more depressive symptoms and anxiety. Self-compassion was inversely associated with depressive symptoms and anxiety ( $b = -3.72$ ,  $SE = .49$ ,  $p < .001$  for depressive symptoms;  $b = -6.08$ ,  $SE = .91$ ,  $p < .001$  for anxiety). However, neither depressive symptoms nor anxiety was associated with restrained ( $b = -.10$ ,  $SE = .14$ ,  $p = .472$  for depressive symptoms;  $b = .03$ ,  $SE = .08$ ,  $p = .692$  for anxiety) or emotional eating ( $b = -.21$ ,  $SE = .36$ ,  $p = .569$  for depressive symptoms;  $b = .27$ ,  $SE = .19$ ,  $p = .160$  for anxiety). Moreover, self-compassion was not associated with restrained ( $b = -.82$ ,  $SE = .93$ ,  $p = .379$ ) or emotional eating ( $b = -3.20$ ,  $SE = 2.3$ ,  $p = .165$ ). Finally, none of the indirect effects for the models was significant. This provides more support for the ordering of the variables in the model proposed in our study.

Next, we examined if the links between internalized weight stigma, psychological well-being, and emotional and restrained eating differed based on women's weight. Although internalized weight stigma occurs in women of all weight categories, research does suggest internalized weight stigma increases as weight increases (Boswell and White 2015; Pearl and Puhl 2014). Moreover, it is also possible that maladaptive eating behaviors like emotional and restrained eating are more frequently used as coping mechanisms in women with heavier weight (Geliebter and Aversa 2003; Konttinen et al. 2009). Thus, we examined whether or not BMI was a moderator of the links between internalized weight stigma, anxiety and depression, and maladaptive eating behaviors. BMI was calculated using self-reported height and weight, and we used a moderated mediation model in PROCESS version 3.4 for SPSS (Hayes 2017). This allowed us to examine whether the relationship between internalized weight stigma and both depressive symptoms and anxiety changed as BMI increased and whether the relationship

between both depressive symptoms and anxiety and emotional and restrained eating changed as BMI increased. We also examined the conditional indirect effects of internalized weight stigma on emotional and restrained eating through both depressive symptoms and anxiety to determine if moderated mediation occurred.

A significant interaction emerged between internalized weight stigma and BMI in explaining depressive symptoms ( $b = .05$ ,  $SE = .03$ ,  $p = .039$ ). Decomposition of this interaction suggested that as BMI increased, the relationship between internalized weight stigma and depressive symptoms became stronger (16<sup>th</sup> percentile,  $b = 1.33$ ,  $SE = .26$ ,  $p < .001$ ; 50<sup>th</sup> percentile,  $b = 1.57$ ,  $SE = .22$ ,  $p < .001$ ; 84<sup>th</sup> percentile,  $b = 2.01$ ,  $SE = .30$ ,  $p < .001$ ). No significant interaction emerged between internalized weight stigma and BMI in explaining anxiety ( $b = .06$ ,  $SE = .05$ ,  $p = .194$ ).

A significant interaction also emerged between anxiety and BMI in explaining restrained eating ( $b = -.02$ ,  $SE = .008$ ,  $p = .030$ ). However, decomposition of this interaction did not reveal significant relationships between anxiety and restrained eating at the 16<sup>th</sup> ( $b = .15$ ,  $SE = .10$ ,  $p = .120$ ), 50<sup>th</sup> ( $b = .07$ ,  $SE = .08$ ,  $p = .393$ ), or 84<sup>th</sup> percentiles ( $b = -.09$ ,  $SE = .09$ ,  $p = .346$ ). Further, no significant interaction emerged between depressive symptoms and BMI in explaining restrained eating ( $b = .004$ ,  $SE = .01$ ,  $p = .762$ ). Neither the conditional indirect effect of weight stigma on restrained eating through anxiety nor the conditional indirect effect of weight stigma on restrained eating through depression was significant.

No significant interactions emerged between anxiety and BMI ( $b = -.01$ ,  $SE = .02$ ,  $p = .767$ ) or depressive symptoms and BMI ( $b = .01$ ,  $SE = .03$ ,  $p = .728$ ) in explaining emotional eating. In addition, neither the conditional indirect effect of weight stigma on emotional eating through anxiety nor the conditional indirect effect of weight stigma on emotional eating through depression was significant.

## Discussion

Our results suggested that internalized weight stigma alone, as opposed to a sequence of internalized weight stigma and psychological well-being or psychological well-being alone, explained the link between self-compassion and fewer maladaptive eating behaviors in women. Women who are self-compassionate may be more resilient to the internalization of weight stigma. Weight stigma becomes internalized in several different ways (Ratcliffe and Ellison 2015), and self-compassion may allow women to discount some of the factors that lead to the internalization of negative weight-based experiences. For example, women are repeatedly exposed to cultural norms about ideal body types in the media (Bozsik et al. 2018; Grabe et al. 2008), and over time, this may lead to the development of negative beliefs and perceptions about what society thinks of people with overweight and obesity. Moreover, individuals are often discriminated against because of their size, and these experiences can also become internalized (Durso and Latner 2008; Robinson et al. 2016). Being able to direct kindness inward and be less self-critical when these beliefs surface may help prevent the internalization of negative weight-related experiences. Women with self-compassion may accept that everyone has body imperfections and flaws, and this might allow them to have a more realistic view of body shapes and sizes (Wong et al. 2019).

It is also possible that self-compassion helps women accept and acknowledge their negative weight-related emotions without overidentifying with and internalizing them. There is some evidence that one way individuals, especially individuals with higher weight, cope with internalized weight stigma is through maladaptive eating behaviors (Pearl and Puhl 2018; Puhl et al. 2007). Thus, if individuals are able to use self-compassion as a tool to reduce internalized weight stigma, it may also reduce their need to cope with their feelings through maladaptive eating behaviors such as emotional and restrained eating. For example, restrained eaters who were asked to eat a donut during the first part of a study subsequently ate more candy in a later phase of the study unless they were told to think about eating the donut in a self-compassionate manner (Adams and Leary 2007).

The links between self-compassion and maladaptive eating behaviors were not explained by the sequence of internalized weight stigma and psychological well-being. However, self-compassion was associated with lower levels of depression and anxiety, both directly and through lower internalized weight stigma. Research consistently links self-compassion with better psychological well-being, including reduced depressive symptoms and anxiety (MacBeth and Gumley 2012). These results suggest that internalized weight stigma may be one mechanism that explains this relationship. Our post hoc analyses further suggested that the link between internalized weight stigma and depressive symptoms became

stronger as BMI increased. Heavier weight women may be more strongly impacted by internalized weight stigma because the norms perpetuating ideal body types are so pervasive and ingrained into Western culture. Because weight is visible, it may leave women who deviate from this norm more vulnerable to evaluation and stigma (Ratcliffe and Ellison 2015). The more women feel evaluated or stigmatized by society because of their weight, the more strongly they may internalize these experiences and negatively evaluate themselves (Ratcliffe and Ellison 2015). Taken together, these factors may contribute to higher levels of negative mood and depression in women with higher weight.

The link between self-compassion and depressive symptoms and anxiety remained significant even after taking into account internalized weight stigma. This suggests that there may be additional mechanisms that explain these relationships. Some research has speculated the link between self-compassion and psychological well-being may be explained by avoidance and rumination (Krieger et al. 2013; Raes 2010). It is thought that self-compassion reduces negative affect following adverse events and also helps individuals focus less on the potential negative outcomes of events (Allen and Knight 2005; Leary et al. 2007). For example, the links between self-compassion and lower depression and anxiety were explained by decreased levels of rumination in a sample of undergraduate college students (Raes 2010). Conversely, in a sample of depressed individuals, lower levels of self-compassion were associated with more ruminative thoughts about depressive symptoms and higher levels of cognitive and behavioral avoidance (i.e., avoidant functioning). This avoidant functioning, in turn, was associated with higher levels of depression (Krieger et al. 2013).

A final reason that the indirect effects of self-compassion on emotional and restrained eating were not explained by the sequence of internalized weight stigma or psychological well-being was that depressive symptoms and anxiety were not associated with emotional or restrained eating. This is inconsistent with prior research linking depression and anxiety to both emotional and restrained eating (Ashmore et al. 2008; O'Brien et al. 2016). Moreover, theory suggests that individuals engage in more emotional and less restrained eating as a result of negative affect (Macht 2008). One reason for this could be that a relatively small percentage of women in our sample reported clinical levels of depressive symptoms and anxiety. Other indicators of negative emotional states such as negative affect, stress, or emotion dysregulation may have been better predictors of emotional and restrained eating.

## Limitations and Future Research

The current study has several limitations that should be noted. This study was cross-sectional, and no temporal or causal relationships should be inferred from our mediation or

moderated mediation models. The cross-sectional nature of our data also made our study susceptible to common method variance, which occurs when participants are asked to respond to multiple measures within the same survey. Common method variance can affect both the strength and direction of the relationships because factors such as the consistency effect, social desirability, and priming are artificially influencing the true relationship among variables (Podsakoff et al. 2003). However, our hypotheses were based on theory and research suggesting that self-compassion and internalized weight stigma are associated with poorer psychological well-being and eating behaviors (Durso and Latner 2008; MacBeth and Gumley 2012; Ratcliffe and Ellison 2015). Moreover, we did not find support for an alternative model that examined self-compassion, anxiety, and depressive symptoms as serial mediators of the links between internalized weight stigma and emotional and restrained eating, which provides further support for the model proposed in this study. Future longitudinal and experimental research should be conducted to confirm the temporal ordering, strength, and direction of the relationships reported in this study.

Additionally, data were collected through an online self-report data survey, and participants may have underreported their weight, psychological distress, and eating behaviors. However, providing women with an anonymous outlet may have encouraged more accurate responses. Finally, there are limitations to our measures of BMI and eating behaviors. Using BMI as a measure of weight status is problematic, as BMI can be influenced by factors like age, gender, race, and ethnicity (Keys et al. 2014; Richmond et al. 2015) and fails to take into account the difference between fat and lean muscle mass (Cetin et al. 2016). Regardless, BMI is still widely used as a way to classify weight because it is a simple measure that is easy to calculate and relatively accurate (Keys et al. 2014). Further, self-reported emotional eating may reflect an individual's perceived associations between their emotions and eating rather than actual eating behavior (Adriaanse et al. 2011). However, individuals who engage in emotional eating consume a higher amount of calories when they are stressed (O'Connor et al. 2008). Finally, restrained eating can be rigid or flexible, and some research suggests that rigid restraint may be more maladaptive than flexible restraint (Westenhoefer et al. 2013). Unfortunately, our measure of restrained eating could not delineate between flexible and restrained eaters. Finally, the generalizability of our data is also limited because most women in our sample were white, middle class, and college-educated. Some evidence suggests that women and White individuals are more likely to internalize weight stigma. Compared to White women, Black women may be less likely to cope with weight stigma using disordered eating and Hispanic women may be more likely to use disordered eating as a means of coping with weight stigma (Himmelstein et al. 2017). Future research should examine the associations of

self-compassion, internalized weight stigma, psychological well-being, and eating behaviors in a more diverse sample including men and people of color.

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**Author Contribution** EF designed and executed the study, conducted the data analyses, and wrote the paper. RH collaborated with the data collection and writing of the introduction, method, and discussion and edited the final manuscript. AS collaborated with the writing of the introduction, method, and discussion and edited the final manuscript. All authors approved the final version of the manuscript for submission.

**Data Availability** The data that support the findings of this study are available from the corresponding author (EF), upon reasonable request.

## Declarations

**Ethics Approval** Data collection for this study complied with the APA's ethical standards in the treatment of subjects. This study was reviewed and approved as exempt by the University of Indianapolis Institutional Review Board.

**Consent for Publication** All participants provided informed consent before taking part in the study.

**Conflict of Interest** The authors declare no conflicts of interest.

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