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Mechanisms underlying weight status and healthcare avoidance in women: A study of weight stigma, body-related shame and guilt, and healthcare stress

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ABSTRACT

Studies show that women with high BMI are less likely than thinner women to seek healthcare. We aimed to determine the mechanisms linking women's weight status to their healthcare avoidance. Women ($N = 313$) were surveyed from a U.S. health-panel database. We tested a theory-driven model containing multiple stigma and body-related constructs linking BMI to healthcare avoidance. The model had a good fit to the data. Higher BMI was related to greater experienced and internalized weight stigma, which were linked to greater body-related shame. Internalized weight stigma was also related to greater body-related guilt, which was associated with higher body-related shame. Body-related shame was associated with healthcare stress which ultimately contributed to healthcare avoidance. We discuss recommendations for a Weight Inclusive Approach to healthcare and the importance of enhancing education for health professionals in weight bias in order to increase appropriate use of preventive healthcare in higher weight women.

1. Introduction

Multiple professional societies and health agencies, both in the U.S. and internationally, have proposed new guidelines for the treatment of individuals based on body mass index (BMI) (Ryan, 2016). These guidelines presume a person with "obesity" is beset with a disease requiring intervention, as driven by The Obesity Society's (TOS) "Obesity as a Disease Writing Group" (Allison et al., 2008). Accordingly, in the U.S., per the current Obesity 2 Guidelines (Jensen et al., 2014), healthcare professionals are expected to: (a) calculate BMI at annual visits (or more often); (b) advise patients on high BMI risks; (c) counsel patients with BMIs over 30 (and BMIs over 25, if they have comorbidities) to lose weight, noting larger losses will lead to more benefits; (d) prescribe calorie restriction and, if feasible, nutrition counseling to aid with this; (e) suggest long-term comprehensive high intensity lifestyle programs to implement physical activity and lower calorie eating; and (f) advise bariatric surgery in individuals with BMIs over 40 (and over 35, if comorbidities are present and behavioral approaches were unsuccessful) (Apovian, 2014). These expectations—and the assumptions on which they are based—constitute what Tylka et al. (2014) have referred to as the *Weight Normative Approach*. Although the Weight Normative Approach currently dominates Western healthcare practice, this paradigm has been criticized for having the potential to harm patients (e.g., Calogero, Tylka, & Mensinger, 2016; O'Hara & Gregg, 2012; Tylka et al., 2014). In contrast, the *Weight Inclusive Approach* challenges the belief that a particular BMI reflects certain health practices or health status, suggests that health and wellness can be fostered independent of weight, celebrates the natural diversity of bodies, and seeks to eradicate weight stigmatization within healthcare, thereby facilitating access to healthcare for all individuals (Tylka et al., 2014).

While a discussion of problems and controversies surrounding the new U.S. Obesity 2 Guidelines extends beyond the scope of this paper, we note two important considerations. First, physicians report lacking the comfort, knowledge, time, and skill set to effectively counsel patients on issues surrounding weight (Ashman, Sturgiss, & Haesler, 2016). Second, there is a burgeoning body of research documenting pervasive weight stigmatization among healthcare providers (e.g., Forhan & Salas, 2013; Puhl, Latner, King, & Luedicke, 2014). In fact, one study showed over two-thirds

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(69%) of higher weight people reported feeling stigmatized by their physicians, second only to family members (at 72%) in sources of experienced stigma (Puhl & Brownell, 2006). This finding was later replicated in a Tawainese sample (Wu & Liu, 2015). Although there has been some attention towards stigma reduction programs in healthcare (e.g., Poustchi, Saks, Piasecki, Hahn, & Ferrante, 2013), a recent review showed only small beneficial effects of the programs studied, and, little long-term evidence has been substantiated (Alberga et al., 2016). It is very concerning that multiple studies have noted a delay in seeking healthcare, for women in particular, in order to avoid being fat shamed or being given unsolicited advice to lose weight (e.g., Cossrow, Jeffery, & McGuire, 2001; Drury & Louis, 2002; Lee & Pausé, 2016). Thus, there seems to be a disconnect between the push in the healthcare field to more consistently provide weight loss treatment (Apovian, 2014; Jansen, Desbrow, & Ball, 2015; Ko et al., 2008), and the avoidance of healthcare, especially among higher weight women, because of felt biases and stigma surrounding their weight (Amy, Aalborg, Lyons, & Keranen, 2006; Merrill & Grassley, 2008; Pausé, 2014).

Stigma is defined as "the co-occurrence of labeling, stereotyping, separation, status loss, and discrimination, in a context in which power is exercised" (Hatzenbuehler, Phelan, & Link, 2013, p. 813). Theoretical frameworks have been proposed in public health that conceptualize stigma as a *fundamental cause* of ongoing health inequities (Hatzenbuehler et al., 2013). Weight or fat stigma is the "moral discrediting" (Brewis, 2014) experienced by a person living in a higher weight body as a result of the negative decrees and social judgements casted by others. This moral discrediting includes beliefs that fatter people are sloppy, dishonest, and noncompliant (Puhl & Peterson, 2014). Notably, despite the increasing attention towards weight in the past two decades, doctors' negative reactions towards higher weight patients are not new (Najman, Klein, & Munro, 1982), and this negativity does not appear to be waning (Phelan et al., 2014; Tomiyama et al., 2015). Multiple forms of weight stigma exist and terms to describe stigmatization vary from prejudice to bias to discrimination. Although each of these terms have unique nuances, we are using the term "stigma" broadly in this context to cover these multiple but related concepts (Stuber, Meyer, & Link, 2008). In this study, we are also distinguishing two forms of weight stigma, "experienced" and "internalized."

The experience of weight stigmatization has a compelling history of studies showing its negative implications on health outcomes (e.g., Hunger & Major, 2015; Sutin et al., 2016; Udo, Purcell, & Grilo, 2016; Vadiveloo & Mattei, 2017), including mortality (Sutin, Stephan, & Terracciano, 2015), and stigmatization in general negatively impacts population health through structural oppression (Link & Phelan, 2006) (see Pascoe & Smart Richman, 2009, for a review). However, recent research demonstrates that internalized weight stigma may actually be even more insidious than experienced weight stigma (Latner, Barile, Durso, & O'Brien, 2014; Pearl & Puhl, 2016). While experienced weight stigma describes specific instances where individuals are treated negatively because of their fatness, internalized weight stigma on the other hand, occurs when stigma is self-directed, personalized, and afflicted towards oneself (Durso & Latner, 2008).

Internalized weight stigma has been consistently associated with markers of negative psychological well-being, such as disordered eating, body dissatisfaction, lower levels of physical activity, emotional dysregulation, and low self-esteem (e.g., Hilbert, Braehler, Haeuser & Zenger, 2014; Pearl, Puhl, & Dovidio, 2015; Puhl, Moss-Racusin, & Schwartz, 2007; Webb & Hardin, 2016). Moreover, the internalization of weight stigma has also been implicated as a moderator of the relationship between BMI and health-related quality of life (Latner et al., 2014). This study demonstrated that there was an association between higher weight status and poorer health-related quality of life, but *only* in individuals with high levels of internalized weight stigma. Similarly, high levels of internalized weight stigma was also found to be a barrier to improving physical activity and eating outcomes in healthy living interventions (Mensinger & Meadows, 2017; Mensinger, Calogero, & Tylka, 2016).

Experienced weight stigma can be explicit (i.e., deliberate, such as beliefs that fat patients are lazy and weak-willed) or implicit (i.e., non-deliberate, such as an environment that does not accommodate fatter bodies), and research suggests that even implicit biases among physicians contribute to health disparities for marginalized people (Chapman, Kaatz, & Carnes, 2013). Ultimately, weight stigma (both implicit and explicit) can manifest as healthcare professionals' negative attitudes and behaviors towards higher weight patients (Phelan et al., 2014; Sabin, Marini, & Nosek, 2012; Tomiyama et al., 2015; see Malterud & Ulriksen, 2011 for a review). These negative attitudes and behaviors not only contribute to higher weight patients' experiences of weight stigma at their healthcare provider's office, but they likely negatively impact their future healthcare utilization, either with that provider or other providers.

To date, existing research has only focused on the association between patient BMI and healthcare utilization (e.g., Adams, Smith, Wilbur, & Grady, 1993; Reidpath, Crawford, Tilgner, & Gibbons, 2002) and has not yet explored processes that may connect these variables, such as experienced weight stigma from their healthcare provider and the internalization of weight stigma. Indeed, the mechanisms underlying this association are unclear, and the nature and direction of this relationship tends to depend on the type of services considered. Whereas BMI has shown a positive relationship with outpatient medical services and Emergency Room (ER) use (Fontaine, Faith, Allison, & Cheskin, 1998; Reidpath et al., 2002), BMI is negatively related with preventive care, such as gynecological and/or breast cancer screenings (Adams et al., 1993; Amy et al., 2006; Fontaine et al., 1998; Reidpath et al., 2002; Wee, McCarthy, Davis, & Phillips, 2000), as well as colorectal cancer screening (Rosen & Schneider, 2004).

Because healthcare is one of the primary sources of stigma faced by people with high BMI (Puhl & Brownell, 2006; Wu & Liu, 2015), one group of researchers tested the hypothesis that "doctor shopping" might partially explain the increased ER service utilization rates in patients with high BMI (Gudzune et al., 2013). In their sample of over 20,000 healthcare beneficiaries, analyses of claims data indicated that patients labeled as "overweight" and "obese" had increased odds of doctor shopping (defined as having five or more different primary care providers within a period of 24 months) compared to lower weight patients. Doctor shoppers, regardless of weight, tended to utilize more services, as determined by ER visits (Gudzune et al., 2013).

In the present study, we aimed to show the variables linking BMI and healthcare avoidance. We constructed a model grounded in Stereotype Threat Theory (Steele & Aronson, 1995) and Social Identity Threat (Major & O'Brien, 2005). Stereotype Threat Theory elucidates how stigmatized groups tend to underperform under certain situational cues, and Social Identity Threat describes how stigma elicits both volitional and non-volitional stress responses (e.g., increased blood pressure, nonverbal anxiety) to social situations that are potentially threatening. Women are particularly vulnerable to social identity threat according to previous research examining stress within workplace settings and burnout (e.g., Hall, Schmader, & Croft, 2015). The implicit and explicit weight biases in healthcare professionals are indeed potentially threatening to patients (Merrill & Grassley, 2008; Pausé, 2014). Once stigma-induced identity threat is anticipated, some people cope using disengagement (i.e., avoidance) strategies (Merrill & Grassley, 2008; Miller & Kaiser, 2001), and hence avoid the healthcare encounter altogether.

Based on the conceptual processes of identity threat, stereotype threat, and felt stigma, Phelan et al. (2015) proposed (but did not test) a multicomponent conceptual model describing the relationship between higher BMI and poorer health outcomes. We are expanding on their work by focusing on a specific component of their model—the prediction of healthcare avoidance—as well as integrating body image variables (i.e., internalized weight stigma, body-related guilt, body-related shame) as fundamental components of the model to be tested.

More specifically, as suggested by previous research, people with higher BMI experience more weight stigma (see path a in Fig. 1). Therefore, having a higher BMI and facing weight stigma are often linked to internalized weight stigma (O'Brien et al., 2016; Tylka et al., 2014; see paths b and c). Drawing from their research on stigma in HIV-infected individuals, Dickerson and colleagues have also theorized that threats to the social self will lead to negative outcomes in the form of stress responses that specifically hinge on the presence of shame (Dickerson, Gruenewald, & Kemeny, 2004; see path d). Furthermore, when threats to the social self are internalized, they will likely prompt negative emotions (e.g., guilt and shame) about the self in that particular domain (Tangney, 2002). Indeed, internalized weight stigma (assessed by rumination and distress about weight) has been found to be associated with body-related shame and guilt (Conradt et al., 2007; see paths e and f).

Shame and guilt can be differentiated primarily by the focal point of the attributions. In guilt, a behavior is negatively evaluated; whereas shame extends beyond guilt in that a core component of self (e.g., being fat) is viewed as objectionable or defective (Tangney, Miller, Flicker, & Barlow, 1996; see path g). Therefore, shame has been considered predominant to guilt in health outcomes—such as healthcare stress and avoidance, because it is associated more intimately with the person's sense of self, and the related construct of guilt is only associated with an action in which the person engaged (Brown, 2006; Dickerson et al., 2004; Tangney et al., 1996; see paths h and i). In fact, researchers have developed a conceptual model suggesting the experience of body shame in women will predict avoidance of cancer screenings (Ridolfi & Crowther, 2013). Ultimately, shame-induced stress over the healthcare encounter is thought to lead to a greater tendency to avoid the encounter, especially for higher weight women who have experienced and internalized weight stigma and body-related guilt (path j).

To our knowledge, no studies have yet considered weight stigma in the context of a Social Identity Threat framework (Dickerson et al., 2004; Major & O'Brien, 2005) to comprehensively test and connect a set of interrelated processes from weight status to generalized healthcare avoidance in a path analysis. Thus, the purpose of the present study was to address this gap in the literature by testing the conceptual model shown in Fig. 1 among a sample of adult women. Given the research reviewed above, we proposed that we would find support for overall model fit with significant, positive paths from: (a) BMI to experienced weight stigma, (b) BMI to internalized weight stigma, (c) experienced weight stigma to internalized weight stigma, (d) experienced weight stigma to body-related shame (e) internalized weight stigma to body-related shame, (f) internalized weight stigma to body-related guilt, (g) body-related guilt to body-related shame, (h) body-related shame to healthcare stress, (i) body-related shame to healthcare avoidance, and (j) healthcare stress to healthcare avoidance.

2. Method

2.1. Procedure and participants

Data were derived from a cross-sectional online survey drawn from a U.S.-based healthcare research panel coordinated by a Qualtrics project manager (Qualtrics, Provo, UT). Survey respondents/panelists have accounts through the Qualtrics system and receive multiple email invitations per week about studies in which they may be eligible to participate. Eligibility criteria for the current study required participants to be female and between the ages of 25 and 85 years. Potential participants were told the length of the survey and the incentives available for completion (e.g., airline miles, redeemable points with specific vendors, sweepstakes entrance) prior to giving informed consent to participate. The first author's Institutional Review Board reviewed and approved the protocol for the study.

Our target sample size was approximately 300, based on our hypotheses and the recommendations provided by Kline (2005) for testing structural equation models. Path analysis, which is the approach utilized for the current study, is a form of structural equation modeling that uses observed as opposed to latent variables. There were three attention checks spaced throughout the survey, and the mean duration of completing the survey on a pilot set of responses was examined to identify individuals who did not spend an adequate amount of time on the survey (defined as less than one third of the average completion time, <5.33 min). In a period of two weeks during the fall of 2016, we gathered 370 complete responses; 63 additional participants opened the survey and decided not to move forward with completing it. Of the 370 complete responses, 55 participants were excluded due to failure to pass one of the three validity check questions *and/or* the time parameter. Thus, there were 315 responses that passed all quality checks. While checking for outliers and affirming distributional assumptions, two additional cases were dropped due to having unusual data points (BMIs < 10). The average completion time (using the 5% trimmed mean in order to omit extreme values) for the sample included in the analysis was 20.03 min ($SD = 40.08$; Range = 5.98–380). The average completion time (again using the 5% trimmed mean) for the excluded participants was 10.29 min ($SD = 92.17$; Range = 2.55–667). The demographic characteristics of the 313 women used in the analyses can be found in Table 1.

2.2. Measures

2.2.1. Body mass index (BMI)

Height and weight were self-reported in pounds and inches. If a woman was currently pregnant, she was asked to give her pre-pregnancy weight. Values were converted to metric and BMI was calculated using the formula: weight (in kilograms) divided by height (in meters) squared.

2.2.2. Experienced weight stigma

The 10-item Stigmatizing Situations Inventory (SSI-brief; Vartanian, 2015) assessed the frequency of experienced weight stigma (e.g., *"Having a doctor recommend a diet even if you did not come in to discuss weight loss"* and *"Being stared at in public")*. Although the SSI is a measure of experienced weight stigma in general, and not one exclusive to a participant's experience of weight stigma in the healthcare environment, the question related to healthcare stigma as well as the item asking about being stared at in public were the most frequently endorsed items on the scale. Moreover, the experience of weight stigma is likely to impact an individual's tendency to avoid situations—such as the healthcare encounter—where body size and weight are especially salient. Thus, a measure of one's general experience of weight stigma was regarded as an appropriate scale for testing our model.

Statements on the SSI-brief are rated according to the frequency with which they are experienced, ranging from 0 (*never*) to 9 (*daily*). Items are averaged, with higher scores indicating more frequent experiences of weight stigma. Scores on the SSI-brief showed convergent validity and internal consistency reliability in a wide

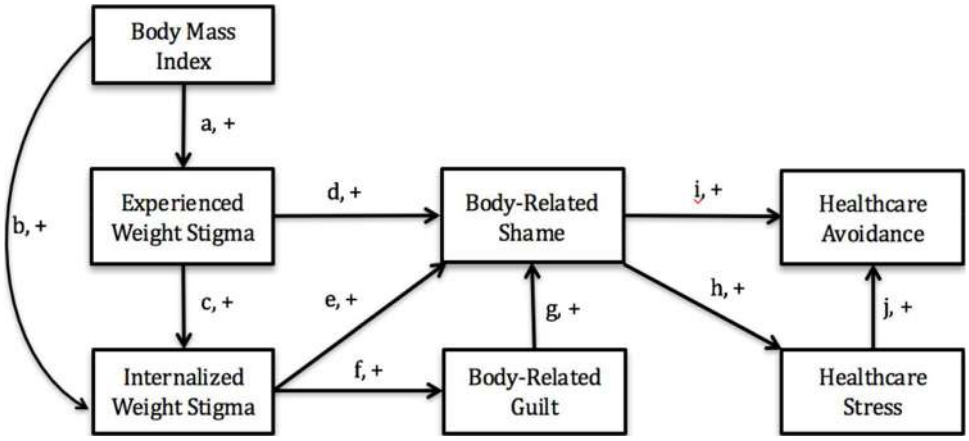

Fig. 1. Conceptual model of hypothesized relationships between body mass index and avoidance of healthcare in women. Each letter represents a hypothesized path; the positive sign represents a positive relationship between the two variables.

Table 1
Demographic characteristics of the study sample ($N = 313$).

Characteristic	*n* (%)
Education	
Less than high school degree	4 (1.3)
High school degree or equivalent (e.g., GED)	58 (18.5)
Some college or trade school	120 (38.4)
Bachelor's Degree	88 (28.1)
Master's Degree or equivalent	43 (13.7)
Employment Status	
Employed full-time (40 or more hours per week)	96 (30.7)
Employed part-time (1–39 hours per week)	45 (14.4)
Not working (e.g., disability, student, homemaker)	63 (20.0)
Retired	109 (34.8)
Race/Ethnicity	
Black/African-American	14 (4.5)
Hispanic/Latinx	13 (4.2)
White/Caucasian	268 (85.6)
Asian	10 (3.2)
Native American/Alaskan Native	1 (0.3)
Multi-racial/Mixed	6 (2.0)
Other/None of the above	1 (0.3)
Marital Status	
Married or cohabiting with partner	185 (59.1)
Widowed	34 (10.9)
Divorced or separated	48 (15.3)
Single/never married	46 (14.7)
Annual Household Income, USD	
Less than $20,000	34 (10.9)
$20,000–$39,999	72 (23)
$40,000–$59,999	79 (25.3)
$60,000–$79,999	42 (13.4)
$80,000–$99,999	36 (11.6)
More than $100,000	50 (16)
Children	
Yes	201 (64.2)
No	112 (35.8)
Chronic Illness	
Yes	98 (31.3)
No	215 (68.7)
Mean Age, years (*SD*) (Range)	56.1 (14.7) (25.0–84.0)
Mean Body Mass Index, kg/m^2 (*SD*) (Range)	28.4 (7.1) (16.0–54.2)

variety of participants, and thus, was deemed to be a comparable, yet more efficient, measure to Myers and Rosen's (1999) full version of the SSI (Vartanian, 2015). In the present study, Cronbach's alpha was .91.

2.2.3. Internalized weight stigma

The 11-item Weight Bias Internalization Scale Modified (WBIS-M; Pearl & Puhl, 2014) assessed the degree to which participants have internalized society's negative attitudes towards higher body weight. The WBIS-M asks participants about current feelings regarding their weight (e.g., "My weight is a major way that I judge my value as a person"). Items are rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Item responses are averaged, with higher scores indicating greater internalized weight stigma. Prior research has established the WBIS-M as an internally consistent and valid measure of self-directed weight stigma for individuals across the weight spectrum (Pearl & Puhl, 2014). In the present study, Cronbach's alpha was .95.

2.2.4. Body-related shame and guilt

The 12-item Weight, Eating, and Body-Related Shame and Guilt Scale (WEB-SG; Conradt et al., 2007) separately assessed the degree to which individuals experience shame and guilt over weight, body image, eating, and physical activity. The WEB-SG contains two subscales: shame (six items, e.g., "The appearance of my body is embarrassing for me in front of others") and guilt (six items, e.g., "When I have eaten more than I want, I experience feelings of guilt"). Items are rated on a 5-point scale from 0 (*never*) to 4 (*always*). For each subscale, responses are averaged, with higher scores indicating greater shame or guilt. In a community sample of women, both subscales evidenced internal consistency as well as validity (Conradt et al., 2007). In the present study, Cronbach's alphas were .90 for shame and .89 for guilt.

2.2.5. Healthcare stress

The questionnaire used to measure healthcare stress was developed for the purposes of this study after examining the literature on stress and anxiety scales, particularly with respect to health and illness. We determined that none captured the essence of stress over the actual healthcare encounter. Thus, five statements were posed that addressed the participant's stress-related cognitions about visiting a healthcare provider (see Appendix A). Face validity was established through review of the tool and testing with healthcare providers, students training to be healthcare providers, experts in the field of weight stigma, and, importantly, those with lived experience of healthcare stress. Internal consistency reliability was affirmed (Cronbach's alpha = .91). All of the corrected item-total correlations ranged from .76 to .78 and inter-item correlations ranged from .58 to .84, which fall within the recommended ranges for psychometric reliability (e.g., Nunnally, 1978). To determine convergent and discriminant validity, we correlated healthcare stress with the 4-item Perceived Stress Scale ($r = .13$, $p = .02$; Cohen & Williamson, 1988) and the patient trust ($r = -.32$, $p < .001$) and interpersonal treatment subscales of the Abulatory Care Experiences Survey ($r = -.25$, $p < .001$) (Safran et al., 2006). While the

Table 2
Means, standard deviations, and correlations for major study variables.

Variable	*M*	*SD*	1	2	3	4	5	6
1. Body Mass Index, kg/m^2	28.41	7.08	–					
2. Experienced Weight Stigma	0.52	1.09	.29***	–				
3. Internalized Weight Stigma	2.90	1.52	.45***	.44***	–			
4. Body-Related Guilt	1.73	0.99	.19**	.33***	.70***	–		
5. Body-Related Shame	1.42	1.02	.34***	.44***	.79***	.73***	–	
6. Healthcare Stress	4.84	2.51	−.00	−.09	.27***	.23***	.30***	–
7. Healthcare Avoidance	2.34	1.06	−.10	−.05	−.03	−.04	−.07	.35***

$N = 313$.
** $p < .01$.
*** $p < .001$.

stress measures were positively correlated, the small effect size suggests that healthcare stress encompasses stressful aspects of the healthcare encounter that are not accounted for by generalized perceptions of stress in one's life. The negative correlations between the healthcare stress construct and the subscales on the ACES suggest trust in one's provider and positive interpersonal treatment from one's provider are potential methods for dispelling some elements of the stress in anticipating a healthcare encounter.

2.2.6. Healthcare avoidance

The tool to measure healthcare avoidance was also developed for the purposes of this study. Six questions were initially posed assessing the degree to which participants tended to avoid their preventive, maintenance, and emergent healthcare needs. One item was removed due to poor inter-item and corrected item-total scale correlations. The remaining corrected item-total scale correlations fell between .30 and .82, and inter-item correlations ranged from .20 to .88. Item 1, which was a measure of emergent healthcare needs, showed lower inter-item correlations (between .20 and .30) than the preventive healthcare items, but we felt it was important to maintain both emergent and preventive questions in the measure. Given that the Cronbach's alpha was .82 (a reasonably good estimate of internal consistency reliability) with the emergent healthcare needs item in the measure, we choose to retain Item 1. The complete set of the final five items can be found in Appendix B. Convergent validity was determined via its significant correlation with a scale measuring delay of care after discovering a worrisome change in one's breast using Facione, Miakowski, Dodd, and Paul's J-Delay Scale (2002) ($r = .40$, $p < .001$).

2.3. Data analysis

The survey did not allow item skipping; therefore, data were 100% complete. However, for 10% of the sample, the healthcare avoidance item involving mammography was "not applicable" due to age. Thus, we imputed these responses from the clinical breast exam item since there was a correlation of .86 for the 282 women who answered both items. All variables were checked for adequate normality and linearity assumptions using Q–Q plots and by visually examining the histograms of the residualized error distributions. Values for skew and kurtosis were deemed problematic if they exceeded |3| and |10|, respectively (Kline, 2005). Except experienced weight stigma, which was highly positively skewed, all other variables were found to be within acceptable limits. To improve the skew, natural log transformations were taken of the experienced weight stigma scores after adding one to each value in order to correct for the zeros in the dataset.

We performed path analysis and the tests of the conceptual model presented using Mplus version 4.1 (Muthén & Muthén, 1998–2017). On all pathways, we controlled for: (a) income, (b) whether or not the participant identified as having a chronic illness (e.g., diabetes, migraines), and (c) age of the participant. Model fit was determined by comparing multiple fit indices as recommended by Hu and Bentler (1999). Specifically, we examined the χ^2 value, the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). To achieve good model fit, the CFI should have values close to 0.95, the RMSEA should have values close to 0.08, and the SRMR should have values close to 0.06 (Hu & Bentler, 1999). While lower, nonsignificant values of χ^2 are generally indicators of good model fit, the sensitivity of χ^2 to sample size makes it a poor standard fit index. Some have argued an acceptable χ^2 value can be determined by examining the ratio of the χ^2 value to the degrees of freedom, referred to as the relative normed chi-square (Hooper, Couglan, & Mullen, 2008). The suggested ratio for establishing model fit ranges in size from a conservative low of 2.0 to a more liberal high of 5.0 (Hooper et al., 2008). We established a cut point of 3.0 to fall on the low-middle (i.e., relatively conservative) side of this range.

3. Results

The descriptive statistics and correlations for the primary variables in the model can be found in Table 2. The conceptual model proposed in Fig. 1 provided a good fit to the data after removing the nonsignificant direct path linking body-related shame to healthcare avoidance. The fit indices for the trimmed model were: $\chi^2(12) = 25.92$, $p = 0.011$ (χ^2/df ratio = 2.16); CFI = 0.985; RMSEA = 0.061, 90% CI [0.028, 0.093]; and SRMR = 0.037, suggesting a good fit of the model to the data on all indices. The model explained about 18% of the variance in healthcare avoidance. Fig. 2 includes the standardized path coefficients.

As hypothesized, participants with higher BMIs had higher experienced weight stigma and higher internalized weight stigma, both of which were linked to greater feelings of body-related shame. Participants with higher internalized weight stigma also reported greater feelings of body-related guilt, which was linked to higher body-related shame. Higher body-related shame was associated with greater healthcare-related stress, and healthcare-related stress was associated with greater avoidance of healthcare.

4. Discussion

This study provides data to support a theory-driven model that establishes the underlying variables connecting higher weight status to healthcare avoidance in women. Indeed, the relationship between BMI and healthcare avoidance can be explained by weight stigma (experienced and internalized), body-related shame and guilt, and healthcare stress. More specifically, our model demonstrated a direct association between BMI and both experienced as well as internalized weight stigma, which in turn were both associated with higher body-related shame. In addition, internalized weight stigma was associated with greater body-related guilt, which was linked to greater body-related shame. Body-

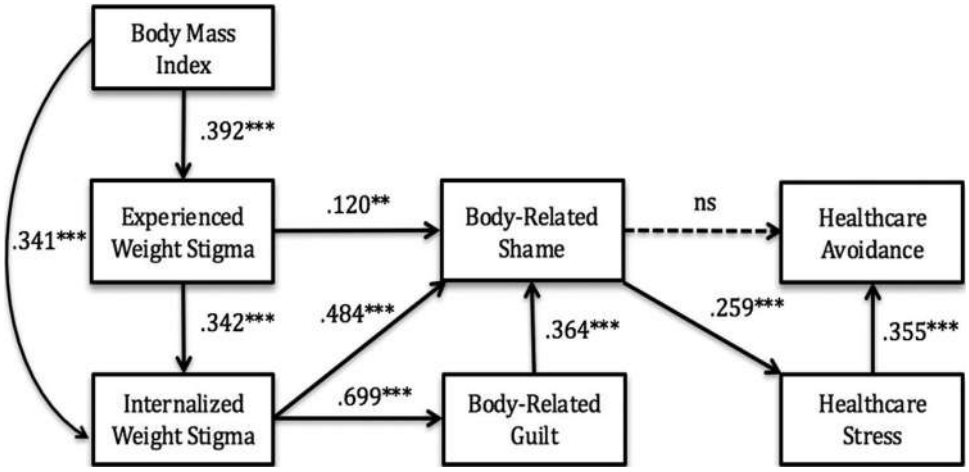

Fig. 2. Standardized path coefficients for the final trimmed model. The nonsignificant path between body-related shame and healthcare avoidance was deleted.
$^{**}p < .01$
$^{***}p < .001$

related shame, was associated with greater healthcare-related stress, which ultimately was linked to greater avoidance of healthcare. Identification of the mechanisms linking BMI to healthcare avoidance underscores the importance of targeting weight stigma, body-related guilt and shame, and consequential stress associated with healthcare in order to improve the use of preventive services and not delay maintenance and emergent healthcare needs in women who are more likely to have experienced weight stigma during healthcare encounters (Lee & Pausé, 2016).

The present research adds to the growing body of evidence emphasizing that the negative health-related sequelae of weight stigma reach beyond psychosocial distress and/or poor behavioral coping demonstrated in prior studies (e.g., Durso & Latner, 2008; O'Brien et al., 2016) (see Puhl & Suh, 2015, for a review). As recent research has suggested, even after adjusting for BMI and sociodemographic risk factors for poorer health, the experience of weight stigma is associated with multiple chronic medical conditions (Udo et al., 2016) and mortality (Sutin et al., 2015). It is conceivable that healthcare avoidance could be a contributing mechanism accounting for the weight stigma—mortality relationship. In a related review paper, body shame was proposed as a predictor of cancer screening avoidance among women (Ridolfi & Crowther, 2013), which is representative of the latter part of our model. Given the increased risks specifically for gynecological cancer deaths in higher weight women (Secord et al., 2016), it is especially relevant to understand the confluence of experienced weight stigma and other body-and weight-related psychological constructs like body-related shame that prompt healthcare-related stress and barriers to preventive care.

Our data suggest the importance of establishing an inclusive healthcare culture, free from weight-related microaggressions (i.e., subtle and often unintentionally damaging messages that degrade marginalized individuals). These might include compliments about looking good after weight loss or instructions to lose weight for unrelated health conditions. Creating an environment that is safe, without body shame or blame, and one that demonstrates respect for everyone will entail training healthcare providers in understanding the presence and power of their own unconscious implicit biases (Teachman & Brownell, 2001). Reversing these biases might be found in the form of continuing education courses for practicing professionals and curricula additions for trainees. Unfortunately, as researchers have determined, this is no easy task (Alberga et al., 2016). When developing courses, patients who have experienced fat stigma and microaggressions from providers must be consulted and have a voice and seat at the table to ensure we do not perpetuate existing problems (Pausé, 2014). Seeking support and advice from grassroots organizations that have aimed to represent marginalized individuals with intersectional identities such as NoLose, The Body is Not an Apology, the National Association for the Advancement of Fat Acceptance, the Council for Size and Weight Discrimination, and the Association for Size Diversity and Health, will also be a crucial component of developing such curricula. Both public and private funding sources need to recognize the significance of this work and prioritize support for developing these curricula in order for the health inequities between oppressed and privileged individuals to be mitigated.

One of the most vexing matters regarding healthcare in the dominant Weight Normative Approach practiced in the U.S. and much of Western medicine is that despite the evidence suggesting a focus on weight is not health promoting (see Tylka et al., 2014, for a review of this literature), we continue to see a push to focus on weight (Ryan, 2016). The Weight Normative Approach insists that physicians record patient BMIs at visits. For instance, in the U.S., some insurance programs have incentivized healthcare providers for collecting patient BMIs (Additional Reimbursement for Reporting Body Mass Index, 2018). The expectation to focus on weight persists even in light of arguments and corresponding data regarding the negative impact of weight loss on mortality rates in higher weight people (e.g., Sørensen, 2003), the convincing evidence showing the harms of weight cycling (e.g., Montani, Shutz, & Dulloo, 2015), and the "obesity paradox" in those with established disease (e.g., Faggioni et al., 2018). Individuals in the "overweight" BMI category, in fact, have been repeatedly shown to live longer than their "healthy" weight counterparts (Flegal, Kit, Orpana, & Graubard, 2013); yet, they too are advised to lose weight (Apovian, 2014).

Indeed, recently the CDC-based journal *Preventing Chronic Disease* published an article about the limitations and harms of using BMI as an indicator of health (Dodgen & Spence-Almaguer, 2017). Their research argued that this was especially problematic for African American/Black women, for whom weight loss programs have been an even less effective means of health promotion than in white women (Kumanyika, Whitt-Glover, & Haire-Joshu, 2014). The Black Women's Health Study reported an association between experienced racism and higher weight (Cozier et al., 2014), which may very well explain racial differences between weight management program outcomes (see Fitzgibbon et al., 2012 for a review). Ultimately, Dodgen and Spence-Almaguer (2017) underscore the

need to (a) recognize social determinants of health over and above lifestyle factors, and, (b) most importantly, consider a holistic and multifaceted approach to health improvement in lieu of weight loss.

Although the present study shows underlying processes linking weight status to healthcare avoidance, our data are limited in several ways. The model we tested implied a set of causal pathways; however, the data were collected as a cross-sectional survey. Therefore, we cannot make any statements about causation because we do not have certainty regarding temporal ordering of the variables. Longitudinal investigations measuring these constructs and subsequent use of healthcare are needed. In addition, while the sample size was adequate to fit the conceptual model proposed, the participants were too limited in diversity to examine any moderating effects or differences by racial and ethnic identity status. As a predominantly White (86%), married (59%) sample of older (average age of 56 years), U.S.-dwelling women of varying household incomes, many of whom were not personally working (55%), we do not know if our findings are representative of people from different backgrounds, countries, or men.

Our analyses controlled for age, income, and the presence of illness as covariates, but understanding specific modifiers to the relationships supported in the conceptual model, especially using an intersectional framework that considers participants' multiple social identities, would be an important component of future research. Moreover, this model explained only 18% of the variance in healthcare avoidance, suggesting that other factors may contribute to avoiding preventive and emergent needs for care. Knowing more specifically *who* is at risk for being negatively impacted by higher weight status, as well as the associated experienced stigma and the series of body image-related and psychological constructs that followed in the model presented, would aid us in giving support to and empowering the most vulnerable individuals with resilience. For instance, some social psychology theorists, such as Major and O'Brien (2005) have suggested challenging identity threat by building agency through collective resistence efforts and forming strong alliances with other group members. These resilience strategies have proven successful in Black/African American (Branscombe, Schmitt, & Harvey, 1999) and LGBTQ (Halpin & Allen, 2004) communities. Research within the fat acceptance community may find similar resilience among those who identify as fat.

Finally, the current findings are based on self-report survey data which have clear limitations with respect to measurement error and socially desirable responding. Our results may have looked different if we had interview data to triangulate with our self-report questionnaire analyses. Clinical research would immensely benefit from attending to and incorporating the voices of patients with lived experiences during healthcare encounters, especially voices of those from multiple oppressed groups. We need to hear what is needed from those being most impacted.

The present research reminds us of the power weight stigma and sizeism have in our culture (Chrisler & Barney, 2017). Our results add novel data to existing evidence that calls into question the usefulness of weight as the central guiding post for determining health (Bacon & Aphramor, 2011; Bombak, 2014). New research shows knowledge or perceptions of having an "overweight" status may actually be harmful to health in the long run (Daly, Robinson, & Sutin, 2017), and such perceptions also predict future weight gain (Robinson, Hunger, & Daly, 2015). Although those who practice from the Weight Normative Approach typically see failure to recognize one's own weight "problem" as a health threat (e.g., Duncan et al., 2011), a recent review shows this assumption does not hold, presumably because of the severe stigma attached to fat bodies and the stress of coping with a tainted social identity (Robinson, 2017). Perhaps we need to return our attention to Muennig's stigma-related hypotheses (2008) where he showed weight *dissatisfaction*, not weight itself, was the actual predictor of later disease. Thus, the dominant paradigm in Western healthcare may be better served by heeding the growing literature showing a focus on body weight is doing more harm than good (O'Hara & Gregg, 2012).

Knowledge of negative attitudes held by doctors towards fat patients is not new (Najman et al., 1982). However, in more recent years, greater numbers of researchers are recognizing that shaming people for their body size is not motivating and it is harmful to health (e.g., Brewis, 2014; Chrisler & Barney, 2017). Our data add to this important evidence stream. Good health and self-care practices are largely determined by the opportunity factors surrounding access to resources, social capital, knowledge, and power (Hatzenbuehler et al., 2013). The complex system of attunement to mind and body supported through the Weight Inclusive Approach to health is one such resource where health access (as opposed to a health *imperative*), social justice, and fair treatment for all are paramount guiding principles (Tylka et al., 2014). Studies of healthcare relationships have shown that patients are more satisfied and have better outcomes when they have a trusting and respectful relationship with their healthcare providers (Lee & Pausé, 2016; Merrill & Grassley, 2008; Pausé, 2014). The Weight Inclusive Approach to healthcare ensures women's individual life circumstances and needs are of utmost importance to implementing a plan of self-care and support that works for enhancing her well-being regardless of size and weight (Calogero et al., 2016; Mensinger et al., 2016; Tylka et al., 2014).

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.bodyim.2018.03.001.

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