

WEIGHT STIGMA EXPERIENCES DURING MEDICAL VISITS AND THEIR  
ASSOCIATIONS WITH PROVIDER-PATIENT RELATIONSHIP FACTORS  
AND ADHERENCE FOR INDIVIDUALS WITH HYPOTHYROIDISM

by

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Description</b>
CDC	Centers for Disease Control and Prevention
RIAS	Roter Interaction Analysis System
BMI	Body Mass Index
HIV	Human Immunodeficiency Virus
TSH	Thyroid Stimulating Hormone

## 1. INTRODUCTION

Weight is a personal characteristic that is highly stigmatized (Puhl & Brownell, 2001). Weight stigma refers to the negative attitudes or perceptions surrounding those who are overweight or obese in our society and the discrimination that may result from the negative attitudes or perceptions. Negative perceptions that exist in our society about those who are overweight or obese include that they are lazy, weak-willed, and lack self-control. These negative perceptions can lead to bias and discrimination against individuals who are overweight or obese. In fact, rates of weight discrimination are comparable to rates of racial discrimination (Puhl, Andreyeva, & Brownell, 2008).

Research to understand how weight stigma is related to psychological well-being and health is important because about 70% of Americans over the age of 20 are overweight or obese (CDC, 2017). Previous research has explored experiences of weight stigma for individuals who are overweight or obese and the influence that these experiences may have. Weight stigma experiences have been associated with negative psychological outcomes such as depression and lower quality of life (Jackson, Beeken, & Wardle, 2015).

Weight stigma is common in health care settings. Health care professionals are not immune to the negative societal perceptions surrounding those who are overweight or obese; it has been shown that health care providers often hold negative attitudes about these individuals (Puhl & Heuer, 2009). In fact, one study found that women rated doctors as their greatest source of weight stigma (Puhl & Brownell, 2006). The negative perceptions that providers hold about their patients who are overweight or obese could influence how they communicate with and treat those patients. In a health care setting,

weight stigma may include a provider blaming all of a patient's symptoms or conditions on their weight status, repeatedly lecturing the patient about their diet or physical activity habits without the patient desiring it, and assuming that the patient is lazy or weak-willed due to their weight status. These instances and other instances of weight stigma during medical visits can affect the patient, the provider-patient relationship, and aspects of medical care.

The purpose of this study was to examine how weight stigma during medical visits is related to aspects of the provider-patient relationship and adherence in patients with hypothyroidism.

### **Negative Perceptions of Patients who are Overweight or Obese**

Previous research has shown that health care providers often have negative perceptions regarding patients who are overweight or obese. In a study conducted by Hebl and Xu (2001), physicians were asked to indicate how they felt about a patient and how they would treat that patient based on made-up medical charts. All of the charts indicated that the patient was suffering from migraine headaches, the only difference in the patient charts was gender and that some of the charts characterized patients as average weight, some as overweight, and some as obese. This study found differences between weight statuses in how the physicians perceived the patients and how they indicated they would treat the patients.

In Hebl and Xu's (2001) study, physicians indicated that they would spend less time with the patients who were overweight or obese. They stated that they would spend an average of 31.1 minutes with a patient of average weight, 25 minutes with a patient who was overweight, and 22.4 minutes with a patient who was obese. Additionally,

physicians rated the patients who were overweight or obese more negatively on many items. For instance, physicians were less likely to believe that the patients who were overweight or obese take care of themselves or are self-disciplined. Physicians had less overall positivity toward and personal desire to help patients who were overweight or obese. Also, physicians were less likely to believe that the patients who were characterized as overweight or obese would follow their advice. This study demonstrates the negative perceptions that physicians hold against individuals who are overweight or obese and also demonstrates that these negative perceptions are associated with how patients may be treated during their visits.

Another negative perception that physicians have about their patients who are overweight or obese is that they will be less adherent. One study found that physicians believed that patients with higher BMIs will be less adherent to medications (Huizinga, Bleich, Beach, Clark, & Cooper, 2010). It is not known why physicians felt this way, but the authors speculate that it could be due to weight bias that exists in physicians or existing relationship factors between physicians and patients. This perception could lead to negative outcomes for the patient. When a physician believes a patient may not be adherent, they may be more reluctant to prescribe certain potentially helpful medications or treatments. This could be detrimental for those who are overweight and obese. Furthermore, a patient could discern that their physician does not believe they will adhere which could influence their own behavior.

Previous research has shown that even medical students, future health care professionals, may hold negative attitudes regarding patients who are overweight or obese. A study done by Persky and Eccleston (2011) randomly assigned medical students

to evaluate a normal weight virtual patient or an obese virtual patient. Medical students were asked about their beliefs about the patient, their beliefs about the patient's adherence, and their beliefs about the patient's responsibility for causing his or her condition. Results showed that medical students believed the patient with obesity was less healthy and would be less adherent. Medical students also believed that the patient with obesity was responsible for causing her symptoms while the normal weight patient was not. They also made less visual contact with the virtual patient with obesity. This study further demonstrates the negative attitudes and beliefs that physicians, and future physicians, hold regarding individuals who are overweight or obese. Even during medical school, students hold negative attitudes about individuals who are overweight or obese. It is important that these negative attitudes are addressed during medical education so that communication and health outcomes will not be influenced by a patient's weight status.

Implicit bias refers to unconscious attitudes that affect someone's decisions and actions without their awareness. A study done by Schwartz, O'Neal, Chambliss, Brownell, Blair, and Billington (2003) demonstrated that health care professionals have high levels of implicit weight bias. Implicit weight bias is characterized by negative feelings that an individual is not aware of or that are automatic regarding those who are overweight or obese. Participants in this study included researchers and clinicians attending an obesity conference. They performed the Implicit Association Test and self-report measures regarding obesity. This study found that health care professionals attending this conference, who are experts in obesity, have implicit bias toward individuals who are overweight or obese. Results showed that participants also demonstrated explicit weight bias, as they reported believing individuals who are

overweight or obese are lazy, stupid, and worthless. Explicit biases are biases that the individual is aware of and conscious of, and can be measured through self-report.

Another study that found evidence of implicit weight bias in health care professionals was done by Teachman and Brownell (2001). This study found that the health care professionals rated 'fat people' as 'bad' (vs. good) and 'lazy' (vs. motivated) more frequently.

### **Weight Stigma and the Provider-Patient Relationship**

The negative perceptions that providers may have about their patients who are overweight or obese could be related to the provider-patient relationship and communication during a medical visit. The relationship between the provider and patient is an important part of medical care. In fact, previous research has shown that provider-patient communication and relationship factors are linked to medical visit outcomes such as patient satisfaction and patient adherence (Beck, Daughtridge, & Sloane, 2002).

Research suggests that women who are overweight or obese may experience stigma during prenatal care (Bombak, McPhail, & Ward, 2016). Women who are overweight or obese during pregnancy may encounter stigmatization from health care professionals because obesity can lead to a more difficult pregnancy or birth. During this qualitative study, participants described how they felt that their weight status affected their prenatal care. Women described things related to insensitive word use, refusal of care, and blaming health issues on weight status during this study. Health care professionals may view women who are overweight or obese as "difficult" patients or believe that they are causing these adverse events related to their pregnancy or birth.

Another study done on women undergoing prenatal care also found differences in

BMI and how the patients felt they were treated during prenatal and postnatal care (Mulherin, Miller, Barlow, Diedrichs, & Thompson, 2013). This study found a negative association between BMI and perceived quality of care. This study focused on interpersonal care and women with higher BMIs were more likely to report negative treatment during their pregnancies which included things such as providers not treating them with respect, kindness or understanding, providers not being open or honest, and not caring about the patients' well-being.

In a qualitative study of online weight loss forum users, a few themes were discovered that related to the participants' health care experiences. One of the themes that emerged was providers not effectively managing shame and emotion related to weight (Faith, Thorburn, & Sinky, 2016). The forum users described things such as, "I am aware that I'm obese, and my doctor yelling at me about my weight only increases my shame" and "I am so ashamed to visit the doctor. I only go if it's urgent" (p. 330).

The relationship between the provider and the patient may be affected by weight stigma experiences during a medical visit. For example, one study showed that physicians may build less rapport with patients who are overweight or obese (Gudzune, Beach, Roter, & Cooper, 2013). This study examined audio recorded medical visits and coded communication using the Roter Interaction Analysis System (RIAS), which is a widely used coding system used to evaluate communication during medical visits (Roter & Larson, 2002). Results showed that physicians built less emotional rapport with patients who were overweight or obese. Emotional rapport included things such as partnership, self-disclosure, concern, legitimation, and reassurance. Building rapport is an important component of effective provider-patient communication (Hall, Roter, & Katz, 1988).

Therefore, not building rapport with patients who are overweight or obese could be associated with decreased satisfaction, worse health outcomes, and lower adherence in these patients.

Another important component of provider-patient communication is empathy. Empathy is the ability to “put yourself in someone else’s shoes” or imagine experiencing their emotions or feelings. Experiencing weight stigma during medical visits may be associated with patient ratings of provider empathy. A study of women who were obese found that weight stigma experiences in health care were associated with lower perceptions of provider empathy (Ferrante et al., 2016). Physician empathy has been associated with important medical visit outcomes. For example, one study found that when physicians were more empathetic, patients disclosed more information and had higher medication self-efficacy (Flickinger et al., 2016). When patients do not perceive their physician as empathetic, they could be at risk for a worsened relationship with their physician and negative health outcomes, including nonadherence. It is important that patients who are overweight or obese perceive their physician as empathetic, but negative attitudes that physicians hold may lead to them showing less empathy toward these patients.

In addition to showing less empathy, physicians may have lower respect for patients who are overweight or obese (Huizinga, Cooper, Bleich, Clark, & Beach, 2009). This study asked physicians to rate their level of respect for their patient after the visit. As patients’ BMI increased, physician respect for them decreased. Respect is an important component of physician-patient relationships. Without respect, physicians may not treat their patients who are overweight or obese as well as their average weight

patients, and this could have implications for the provider-patient relationship, patient satisfaction, and adherence.

Trust is another important component of the provider-patient relationship. Experiences of weight stigma during medical visits may be associated with trust in the provider. In one study, participants were asked to report if they have ever felt that their physician judged them because of their weight. They were also asked to report how much they trusted their provider. Results showed that feeling judged about weight was associated with decreased trust in the provider (Gudzune, Bennett, Cooper, & Bleich, 2014). Studies have shown that patients who trust their providers are more likely to adhere to recommendations such as preventative screenings (O'Malley, Sheppard, Schwartz, & Mandelblatt, 2004) and antiretroviral therapy for HIV patients (Blackstock, Addison, Brennan, & Alao, 2012). When patients who are overweight or obese do not trust their providers, they may be at an increased risk for nonadherence, which could be detrimental to their health.

Providers may also communicate differently with their patients who are overweight or obese (Washington-Cole et al., 2017). In this study, recorded medical visits were coded using the RIAS (Roter Interaction Analysis System) and then evaluated for aspects of provider-patient communication. Results showed that providers discussed lifestyle factors, such as physical activity, nutrition, and breastfeeding, less with patients who were overweight or obese. This shows that patients who are overweight or obese may be receiving less lifestyle counseling during their prenatal visits and this could have implications for the patients' health. In addition, providers used fewer concern and approval statements during their visits with patients who were overweight. These

statements are indicative of building rapport with a patient. Providers using fewer statements of approval and concern with patients who are overweight could show that providers are building less rapport with these patients during their visits. Providers also used fewer self-disclosure statements during their visits with patients who were obese. Self-disclosure statements involve the provider stating a personal experience that they have had that is relevant to what is being discussed during the visit (Beach et al., 2004), for example, “I have a hard time remembering to take pills too.” In this study, results also showed that providers rated their overall relationship quality as lower with patients who were overweight or obese.

### **Consequences of Weight Stigma During Medical Visits**

As discussed in the previous section, weight stigma during medical visits can negatively affect the provider-patient relationship and provider-patient communication, which can, in turn, affect how the patient feels about their medical care and how they fare when they leave the visit. Some consequences of weight stigma during medical visits include patients delaying or avoiding health care and lower rates of adherence.

Adherence is defined as “the degree to which the person’s behavior corresponds with the agreed upon recommendations from a health care provider” (WHO, 2003). It is estimated that only about 50% of patients are adherent to their treatment across conditions (WHO, 2003), and nonadherence is a significant problem that can lead to poor health outcomes. In hypothyroidism specifically, one study found that nonadherence to medication was associated with more healthcare spending, increased use of acute care, and comorbidity with other disorders (Hebb, Lage, Espaillat, & Gossain, 2018).

As a result of experiencing stigma related to their weight, individuals who are

overweight or obese may delay or even avoid medical visits altogether. Previous research has shown that some reasons that individuals who are overweight or obese may delay or avoid health care include gaining weight since their last visit, having to be weighed, and being told to lose weight (Drury & Louis, 2002). Delaying or avoiding medical visits is a negative consequence of experiencing weight stigma during healthcare and could lead to worse adherence and health outcomes.

Another common reason that individuals delay health care is because of embarrassment about their weight (Olson, Shumaker, & Yawn, 1994). In this study, 13% of all participants delayed or avoided medical visits because they knew they would have to be weighed. Additionally, 32% of participants with a BMI (body mass index) greater than 27 (considered to be overweight) reported that they had delayed or avoided medical visits because they knew they would have to be weighed (Olson et al., 1994).

Furthermore, a study done by Amy, Aalborg, Lyons, and Keranen (2006) found that 41% of participants reported that they have delayed seeking health care or cancer-screening tests because of their weight. The women in this study reported disrespectful treatment, embarrassment about being weighed, providers' negative attitudes, receiving advice to lose weight when it was not wanted, and medical equipment that was too small for them as reasons that they have delayed seeking health care or cancer screening tests. In addition, as BMI increased, so did the percentage of participants who reported delaying seeking health care. A total of 35% of participants reported that embarrassment about being weighed was a barrier to seeking health care, and 46% of participants reported that they delayed seeking health care because they would be advised to lose weight. Patients delaying or avoiding health care out of embarrassment or fear of

judgment is a negative consequence of weight stigma in health care.

Body-related shame may also lead to the avoidance of health care. In a study done by Mensinger, Tylka, and Calamari (2018), body-related shame was associated with health care avoidance, with health care stress as a mediator of this relationship. Ultimately, this shows that when individuals feel shame related to their body, they feel more stress related to health care, and as a result of this, they avoid health care.

In addition to delaying or avoiding health care, patients who are overweight or obese may switch health care providers more often (Gudzune et al., 2013). This study showed that “doctor shopping,” characterized by seeing multiple primary health care providers, was more common for patients who were overweight or obese. These results could indicate that patients who are overweight or obese switch health care providers more often as a result of dissatisfaction with their care.

Another consequence of experiencing weight stigma during a medical visit could include lower adherence. When provider-patient communication does not include rapport, empathy, respect, and trust, adherence can be affected. Individuals who are overweight and obese may be at risk for lower adherence due to the nature of their relationships with physicians.

Adherence to cancer screenings is an important aspect of health care and when done appropriately can help detect cancer earlier, leading to better outcomes. Studies have shown that obesity is a barrier to individuals receiving the proper health care screenings. Women who are obese are less likely to be screened for cervical cancer and breast cancer (Maruthur, Bolen, Brancati, & Clark, 2009; Maruthur, Bolen, Brancati, & Clark, 2009b). Avoiding screenings and wellness exams could be especially harmful for

those who are overweight and obese, as they are at an increased risk for many chronic diseases.

Furthermore, in a study done on bariatric surgery patients, weight-related stigma experiences predicted worse adherence to dietary recommendations after the surgery (Raves, Brewis, Trainer, Han, & Wutich, 2016). This could be detrimental to the success of the surgery and eventual weight loss.

Additionally, weight-based discrimination was strongly associated with nonadherence in a sample of African-American women with hypertension (Richardson et al., 2014). Participants were asked to report experiences of discrimination due to weight in situations such as at work, during medical care, and in a public setting. Individuals who reported experiencing discrimination due to weight had greater odds of nonadherence. Self-efficacy mediated this relationship; thus, patients who experience discrimination may not feel as though they have the ability to adhere.

In addition to lower adherence, weight stigma may be a barrier to the effective treatment of diabetes. In a study on patients with Type II diabetes, individuals who attributed discrimination to their weight reported fewer self-care behaviors related to exercise, glucose testing, and diet (Potter et al., 2015). While this study looked at discrimination attributed to weight in all areas of life, not specific to medical visits, the results are still important. One could hypothesize that feeling discrimination from a health care provider or during a medical visit could actually be more detrimental to effective diabetes management than feeling discrimination from other sources.

Patients who are overweight or obese and have diabetes may be at risk for even greater stigmatization from their health care providers. Since Type II diabetes is largely

due to lifestyle factors (e.g., diet, exercise), providers may view diabetic patients who are overweight and obese as responsible for causing their condition. This could lead to even greater negative attitudes and beliefs about these patients and could lead to increased guilt for the patient (Teixeira & Budd, 2009).

Effective provider-patient communication is necessary to improve diabetes management and medication adherence. Physicians' negative attitudes regarding their patients who are overweight or obese negatively influence the physician-patient relationship, communication, and therefore important medical visit outcomes, such as adherence.

### **Hypothyroidism**

Little research has been conducted examining the provider-patient relationship or weight stigma experiences for individuals with hypothyroidism. Hypothyroidism is characterized by an underactive thyroid that does not produce enough hormones. Hypothyroidism is more common in women and can result from a number of events such as thyroid surgery, medications, or an autoimmune disease (Mayo Clinic Staff, 2017).

Hypothyroidism has been associated with weight gain. Previous research has shown that levels of TSH, thyroid stimulating hormone, are associated with weight gain (Fox et al., 2008). It is possible that individuals who have been diagnosed with hypothyroidism may struggle with their weight and may not have as much control over their weight through lifestyle factors such as diet and exercise.

Treatment for hypothyroidism generally involves taking synthetic thyroid hormone medication once per day (American Thyroid Association, 2018). However, even with a relatively simple treatment regimen, adherence levels to hypothyroid medications

are similar to levels for other chronic illnesses with more complex treatment regimens, such as Type 2 diabetes (Briesacher, Andrade, Fouayzi, & Chan, 2008). A recent study showed that about 54% of patients were nonadherent to T4 medication (Hepp et al., 2018). This study measured adherence using a prescription insurance claims database and classified good adherence as greater than or equal to 80% of proportion of days covered based on prescriptions being filled.

The current study explored weight stigma in individuals with hypothyroidism because of the associations between hypothyroidism and weight gain or challenges with weight loss. The purpose of this study was to examine weight stigma experiences during medical visits for individuals with hypothyroidism and determine if these experiences are related to provider-patient relationship factors, delaying or avoiding health care, and adherence.

### **Hypotheses**

The current study had four hypotheses. The first hypothesis was that weight stigma would be negatively associated with adherence and that this relationship would be mediated by trust in provider (see Figure 1). The second hypothesis was that weight stigma would be negatively associated with adherence and that this relationship would be mediated by perceived provider empathy (see Figure 2). The third hypothesis was that weight stigma would be negatively associated with adherence and that this relationship would be mediated by the depth of the relationship between the provider and the patient (see Figure 3). The fourth hypothesis was that weight stigma would be negatively associated with adherence and that this relationship would be mediated by the patient delaying or avoiding health care (see Figure 4).

## II. METHOD

### Study Design

This study used a correlational study design. Data were collected through various self-report surveys. The relationships between weight stigma experiences during medical visits, trust in provider, perceived provider empathy, depth of the relationship between the provider and patient, delaying or avoiding health care, and adherence were examined. The predictor variable was weight stigma experiences during medical visits. Mediating variables included trust in provider, provider empathy, depth of the provider-patient relationship, and delaying or avoiding health care. The outcome variable was adherence.

### Participants

This study included 502 participants. Participants were recruited through posting the survey link and description to one Facebook support group, to one Facebook page, and one Reddit page, each designated for hypothyroidism support. Participants were also recruited by researchers sharing the link on their personal Facebook pages. The inclusion criteria for the study included that individuals must be 18 years or older and have a diagnosis of hypothyroidism. Each participant viewed an informed consent document on the first page of the Qualtrics survey that outlined the study objectives, estimated time to complete the study, and who to contact with questions or concerns, and provided consent by clicking on the designated response. For participating, participants were entered into a raffle for a chance to win one of forty \$50 Amazon gift cards. The Institutional Review Board at Texas State University approved this study.

### Measures

**Weight Stigma.** Weight stigma during medical visits was measured using the

Stigma Situations in Health Care Scale (Ferrante et al., 2016). This scale includes 20 items. Items were modified by changing ‘doctor’ to ‘health care provider.’ This scale was also changed from asking participants to only report incidences of stigma within the last 12 months at a certain clinic to asking participants to consider any stigmatizing experiences during medical visits at any point in their life. Participants were asked to indicate how often the following items had happened to them during any medical visit in their life. Some example items include, “A health care provider blaming unrelated physical problems on your weight,” “A health care provider recommending a diet even if you did not intend to discuss weight,” and “Being treated as lazy by health care providers because of your weight.” Response options ranged from 0 (*never*) to 3 (*three or more times*). This scale has good internal consistency, Cronbach’s  $\alpha = .92$ .

**Trust.** Trust in provider was measured using one item modified from Gudzone, Bennett, Cooper, and Bleich (2014). The item read, “Using any number from 0 to 10, where 0 means that you do not trust your provider at all and 10 means that you trust them completely, what number would you use to rate how much you trust your provider?” Participants were asked to consider the health care provider who primarily treats them when answering this question.

**Empathy.** The Jefferson Scale of Patient Perceptions of Physician Empathy (Kane, Gotto, Mangione, West, & Hojat, 2007) was used to measure patient perceptions of provider empathy. This scale included 5 items and asked participants to rate their level of agreement with each statement. Participants were asked to consider the health care provider who primarily treats them when answering this question. Example items include, “My doctor understands my emotions, feelings, and concerns” and “My doctor

can view things from my perspective (see things as I see them).” Response options ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach’s  $\alpha = 0.58$  which the authors suggest is lower than ideal but sufficient since the scale only includes 5 items. This scale also had good criterion-related validity, as all items on the scale as well as the total scores were found to correlate highly with the selected criterion measure.

**Depth of Physician-Patient Relationship.** Depth of the physician-patient relationship was measured using the Patient-Doctor Depth-of-Relationship Scale (Ridd, Lewis, Peters, & Salisbury, 2011). This scale includes 8 items. Participants were instructed to answer these questions about the provider who primarily treats their thyroid condition. Example items include, “This doctor really cares for me,” and “This doctor accepts me the way I am.” Response options ranged from 1 (*disagree*) to 5 (*totally agree*). This scale has high internal consistency, Cronbach’s  $\alpha = .93$ . This scale has been shown to have good test-retest reliability as well as face validity.

**Delaying/Avoiding Health Care.** Delaying or avoiding health care was measured using the Delay/Avoidance of Health Care Scale from Drury and Louis (2002). The question read, “Have you ever delayed or avoided health care for any of the following reasons?” Reasons listed included: gaining weight since the last visit, having to be weighed, being told to lose weight, needing to undress, and being told you could rid the problem by weight loss. Participants were asked to indicate how often they had avoided or delayed health care for each reason, with response options ranging from 1 (*never*) to 5 (*often*).

**Adherence.** Adherence was measured using the General Adherence Scale from the Medical Outcomes Study (DiMatteo et al., 1993). This asks, “How often was each of

the following statements true for you during the past 4 weeks?” This scale includes 5 items including, “I followed my doctor’s suggestions exactly,” and “I found it easy to do the things my doctor suggested I do.” Response options ranged from 0 (*none of the time*) to 5 (*all of the time*). This scale has good internal consistency,  $\alpha = 0.78$ .

### **Procedure**

This study utilized Qualtrics to administer online surveys to participants. The survey time to completion was 45-60 minutes, and participants were told that they could skip any question that they did not feel comfortable answering. Participants did not enter any identifying information; they were directed to a separate survey at the end to enter their email address to enter into the raffle.

### **Statistical Analyses**

To test the hypotheses, regression with mediation analyses were conducted. The mediation analyses were conducted using the bootstrap method with the SPSS macro add-on for mediation tests provided by Preacher and Hayes (2008). The tests used 1000 bootstrap samples and were used to test direct and indirect relationships between weight stigma, adherence, and each of the mediators. Separate mediation analyses were run for each of the models.

### III. RESULTS

#### Sample Characteristics

A total of 644 individuals completed the Qualtrics survey. One-hundred thirty-four individuals who did not report a diagnosis of hypothyroidism were excluded from any analyses. From this sample, 8 individuals were excluded because they reported being currently pregnant, and this could interfere with their responses to any weight based questions. A final sample of 502 participants was used for this study.

The sample ( $n = 502$ ) was primarily female (96%) which was expected due to hypothyroidism being more common in females. Participants were primarily White (90%). The mean age was 45 years with a standard deviation of 12 years. According to BMI calculations based on self-reported height and weight, 20% of participants were normal weight, 31% were overweight, and 49% were obese. The average level of weight stigma experienced by individuals in our study was 7.30. The weight stigma score could range from 0 to 60. Results indicate that our sample did experience weight stigma, but not often. It is interesting to note that about 63% of participants reported experiencing one instance of weight stigma at least one time. This sample had relatively high levels of adherence ( $M = 3.93$ ,  $SD = 0.96$ ). Sample characteristics are summarized in Table 1.

#### Scale Characteristics and Descriptive Statistics

The 20 items that made up the Stigma Situations in Health Care Scale (Ferrante et al., 2016) were summed to create a total score for the weight stigma variable. In this study, the Stigma Situations in Health Care Scale had high reliability,  $\alpha = .91$ .

An average of the 5 items that made up the Jefferson Scale of Patient Perceptions of Physician Empathy (Kane et al., 2007) was calculated to create a total score for the

empathy variable. In this study, the Jefferson Scale of Patient Perceptions of Physician Empathy had high reliability,  $\alpha = .95$ .

The 8 items that made up the Patient-Doctor Depth-of-Relationship Scale (Ridd et al., 2011) were summed to create a total score for the depth-of-relationship variable. In this study, the Patient-Doctor Depth-of-Relationship Scale had high reliability,  $\alpha = .96$ .

The 5 items that made up the Delay/Avoidance of Health Care Scale (Drury & Louis, 2002) were summed to create a total score for the delay or avoidance of health care variable. In this study, the Delay/Avoidance of Health Care Scale had high reliability,  $\alpha = .89$ .

An average of the 5 items that make up the General Adherence Scale (DiMatteo et al., 1993) was calculated to create a total score for the adherence variable. In this study, the General Adherence Scale had high reliability,  $\alpha = .76$ . Scale characteristics and descriptive statistics for each of the variables are summarized in Table 2.

### **Correlations**

Bivariate correlations were run between weight stigma, trust, empathy, depth-of-relationship, delaying/avoiding health care, and adherence. There was a significant negative correlation between weight stigma and adherence ( $r = -.18, p < .001$ ), which suggested it was appropriate to run the mediation analyses. Results also showed a significant negative correlation between weight stigma and trust in provider ( $r = -.25, p < .001$ ), perceived provider empathy ( $r = -.29, p < .001$ ), and depth-of-relationship ( $r = -.25, p < .001$ ). There was also a significant positive correlation between weight stigma and delaying or avoiding health care ( $r = .46, p < .001$ ). The correlation matrix can be viewed in Table 3.

## **Hypothesis 1**

The first hypothesis was that trust would mediate the relationship between weight stigma and medication adherence. The sample size for this mediation analysis was 356. Weight stigma significantly predicted adherence (c path),  $b = -.02$ ,  $SE = .01$ ,  $t(354) = -3.66$ ,  $p = .0003$ . Weight stigma also significantly predicted trust (a path),  $b = -.06$ ,  $SE = .01$ ,  $t(354) = -4.80$ ,  $p < .001$ . Trust significantly predicted adherence (b path),  $b = .07$ ,  $SE = .02$ ,  $t(354) = 3.22$ ,  $p = .001$ . With the addition of the mediator, trust, the direct effect of stigma on adherence was still significant but lower than the direct effect without the mediator, suggesting a mediating effect (c' path),  $b = -.01$ ,  $SE = .005$ ,  $t(354) = -2.80$ ,  $p = .005$ . The indirect effect of weight stigma experiences on adherence through trust was significant,  $b = -.004$ , 95% CI [-.0079, -.0013]. The model can be viewed in Figure 1.

## **Hypothesis 2**

The second hypothesis was that empathy would mediate the relationship between weight stigma and adherence. The sample size for this mediation analysis was 361. Weight stigma significantly predicted adherence (c path),  $b = -.018$ ,  $SE = .005$ ,  $t(359) = -3.54$ ,  $p = .001$ . Weight stigma also significantly predicted empathy (a path),  $b = -.03$ ,  $SE = .006$ ,  $t(359) = -5.72$ ,  $p < .001$ . Empathy significantly predicted adherence (b path),  $b = .16$ ,  $SE = .05$ ,  $t(359) = 3.36$ ,  $p = .001$ . With the addition of the mediator to the model, the direct effect of stigma on adherence was still significant but lower than without the mediator (c' path),  $b = -.01$ ,  $SE = .005$ ,  $t(359) = -2.47$ ,  $p = .014$ . The indirect effect of weight stigma experiences on adherence through empathy was significant,  $b = -.0051$ , 95% CI [-.0099, -.0015]. The model can be viewed in Figure 2.

### **Hypothesis 3**

The third hypothesis was that patient-doctor depth-of-relationship would mediate the relationship between weight stigma and adherence. The sample size for this mediation analysis was 357. Weight stigma significantly predicted adherence (c path),  $b = -.02$ ,  $SE = .005$ ,  $t(355) = -3.49$ ,  $p = .001$ . Weight stigma also significantly predicted depth-of-relationship (a path),  $b = -.26$ ,  $SE = .05$ ,  $t(355) = -5.03$ ,  $p < .001$ . Depth-of-relationship significantly predicted adherence (b path),  $b = .02$ ,  $SE = .005$ ,  $t(355) = 4.84$ ,  $p < .001$ . With the addition of the mediator, depth-of-relationship, the direct effect of stigma on adherence was still significant but lower than without the mediator (c' path),  $b = -.01$ ,  $SE = .005$ ,  $t(355) = -2.23$ ,  $p = .026$ . The indirect effect of weight stigma experiences on adherence through depth-of-relationship was significant,  $b = -.0064$ , 95% CI  $[-.0111, -.0035]$ . The model can be viewed in Figure 3.

### **Hypothesis 4**

The fourth hypothesis was that delaying or avoiding healthcare would mediate the relationship between weight stigma and adherence. The sample size for this mediation analysis was 347. Weight stigma significantly predicted adherence (c path),  $b = -.02$ ,  $SE = .005$ ,  $t(345) = -3.34$ ,  $p = .001$ . Weight stigma also significantly predicted delaying or avoiding health care (a path),  $b = .18$ ,  $SE = .02$ ,  $t(345) = 9.63$ ,  $p < .001$ . Delaying or avoiding health care significantly predicted adherence (b path),  $b = -.05$ ,  $SE = .01$ ,  $t(345) = -3.22$ ,  $p = .001$ . With the addition of the mediator, delaying or avoiding health care, the direct effect of stigma on adherence became not significant (c' path),  $b = -.009$ ,  $SE = .006$ ,  $t(345) = -1.53$ ,  $p = .1277$ . The indirect effect of weight stigma experiences on

adherence through the delay and avoidance of health care was significant,  $b = -.0152$ , 95% CI  $[-.0152, -.0031]$ . The model can be viewed in Figure 4.

#### IV. DISCUSSION

This study examined the relationship between weight stigma experiences during medical visits and adherence. It was hypothesized that weight stigma would be negatively associated with adherence, and that this relationship would be mediated by the patient's trust in their provider, perceived provider empathy, the depth of the relationship between the provider and the patient, and the patient delaying or avoiding health care. Results support the four hypotheses and show that the relationship between weight stigma and adherence is mediated by a patient's trust in their provider, perceived provider empathy, the depth of the relationship between the provider and the patient, and the patient delaying or avoiding health care.

Our results show that weight stigma during medical visits is related to various aspects of the provider-patient relationship. Previous research has also demonstrated that weight stigma is related to aspects of the provider-patient relationship, and our results are in line with this previous research. For example, Gudzone and colleagues (2014) showed that patients trusted their provider less when they felt judged about their weight during their medical visit. Additionally, previous research reported that patients perceive less empathy from their providers when they feel stigmatized due to their weight status (Ferrante et al., 2016). Our study builds upon previous research by demonstrating that these weight stigma experiences can reach further than the relationship between the provider and the patient during the medical visit and can also be related to the patient's level of adherence when they leave the medical visit.

Results also indicated that there is a relationship between weight stigma experiences during medical visits and adherence such that experiencing weight stigma

during medical visits is associated with lower adherence. This finding is in line with previous research done by Raves and colleagues (2016) who showed in their study that patients receiving bariatric surgery who reported feeling judged about their weight prior to their procedure had lower adherence to dietary guidelines after surgery. Also, our results are similar to the findings of Richardson and colleagues (2014) who showed that participants who reported weight-related discrimination in any setting had greater odds of nonadherence. Since weight stigma experiences are associated with adherence, our findings demonstrate the importance of providers working to eliminate weight stigma experiences for patients with overweight and obesity in order to improve their health care experiences and their overall health.

The first hypothesis in this study was that weight stigma during medical visits would be negatively associated with adherence and that this relationship would be mediated by trust in provider. Results support this hypothesis and show that experiencing weight stigma during a medical visit is related to lower trust in provider and that lower trust in provider is related to lower adherence. Previous research has shown that weight stigma experiences during medical visits are associated with trust in the provider (Gudzune et al., 2014), as well as trust in the provider being associated with adherence (Blackstock et al., 2012). Thus, it was expected that trust would be a mediator between weight stigma experiences and adherence, and this finding falls in line with previous research. This finding demonstrates the negative impact that weight stigma has on the provider-patient relationship and adherence. When a patient experiences weight stigma during a medical visit, they feel less trust in their provider, and this has a negative association with the patient's level of adherence. When patients feel less trust in their

provider, they may begin to question whether their medication or treatment recommendations are truly necessary or if they will be beneficial for them. This could lead to worse adherence. Previous research has also examined a link between trust in provider and a patient's medication self-efficacy, which is defined as a patient's belief about their ability to adhere. Research done by Lee and Lin (2009) examined the relationship between trust and adherence and found that it was mediated by a patient's self-efficacy and outcome expectations regarding their treatment. Trust in health care providers may lead to medication self-efficacy for patients because support and persuasion from trusted providers is likely to enhance the patient's belief that they can adhere to their treatment. Additionally, patients are likely to have greater outcome expectations regarding their treatment if the information regarding the expected outcomes of the treatment come from a trusted provider and greater outcome expectations may lead to better adherence.

The second hypothesis in this study was that weight stigma during medical visits would be negatively associated with adherence and that this relationship would be mediated by perceived provider empathy. Results support this hypothesis and show that when a patient experiences weight stigma during a medical visit, they perceive less empathy being demonstrated by their provider, and this has a negative association with their level of adherence after the visit. Previous research has shown that weight stigma experiences are associated with how much empathy is perceived from the provider (Ferrante et al., 2016). Previous research has also shown that perceived empathy from a provider is associated with adherence (Squier, 1990). Results build upon previous research by demonstrating that the lack of empathy providers demonstrate to their

patients with overweight or obesity can be related to their patients' levels of adherence. Providers showing empathy may lead to greater adherence for their patients because when a provider shows empathy, a patient may feel like the provider truly does have their best interests at heart, which may make them more likely to believe that their prescribed treatment is necessary or will be beneficial. When the patient believes that their prescribed treatment is necessary or beneficial, they may be more likely to adhere to the treatment. Additionally, when a patient perceives empathy from their provider, they may feel more comfortable with their provider which could lead to the patient being more willing to discuss concerns or issues with adherence or their medication. Previous research has also shown that perceived provider empathy is related to a patient's medication self-efficacy (Flickinger et al., 2016), similar to trust in provider. This means that it is possible that a provider showing empathy may lead to a patient feeling confident in their ability to adhere, leading to better adherence.

The third hypothesis in this study was that weight stigma during medical visits would be negatively associated with adherence and that this relationship would be mediated by the depth of the relationship between the provider and the patient. Results support this hypothesis and show that when a patient experiences weight stigma, they perceive a worse relationship with their provider, and that this is associated with their level of adherence. This finding is in line with previous research demonstrating that the relationship between the provider and the patient is associated with weight stigma experiences, and adds to the literature by looking specifically at the depth-of-relationship. Previous research has not looked specifically at associations between weight stigma experiences and depth-of-relationship between providers and patients. The concept of

depth-of-relationship involves the provider and the patient being close to and comfortable with one another. A deeper relationship between providers and their patients may lead to adherence because the patient may feel more comfortable discussing barriers that they experience in regards to taking their medication. Additionally, patients may feel more comfortable discussing any concerns that they have regarding their prescribed treatment such as concerns about side effects or the necessity of the medication. These discussions may be more likely to occur if the relationship between the provider and the patient is strong and could be extremely important in helping the patient to adhere.

The fourth hypothesis was that weight stigma during medical visits would be negatively associated with adherence and that this relationship would be mediated by a patient delaying or avoiding health care. Results support this hypothesis and indicate that the relationship between weight stigma and adherence is significantly mediated by a patient delaying or avoiding health care. Results show that patients experiencing weight stigma during a medical visit may lead to the delay or avoidance of health care. This finding is in line with previous research conducted by Amy et al. (2006) demonstrating that weight stigma experiences are associated with greater healthcare delay or avoidance for individuals who are overweight or obese. Additionally, these results are in line with previous research done by Mensinger and colleagues (2018) who showed that body related shame was related to patients avoiding health care. This finding adds to the literature by demonstrating that a patient delaying or avoiding health care due to weight stigma experiences may be associated with lower levels of adherence for these patients. Patients delaying or avoiding healthcare may lead to them not receiving the care that is necessary. Patients who delay or avoid health care may not be receiving the treatments

that they need; for example, they may be missing out on important prescription refills or prescription dose corrections. If patients are delaying or avoiding health care, they are likely not discussing barriers to adherence or concerns about the prescribed treatment with providers, which may lead to lower adherence. Additionally, for hypothyroidism patients specifically, TSH levels should be checked regularly to make sure medication doses are correct. If levels of TSH are not checked regularly through the patient delaying or avoiding health care, they may begin to experience side effects of incorrect doses of their medication.

Furthermore, it is interesting to note that out of all of the mediators examined in this study, weight stigma experiences had the strongest relationship with the delay and avoidance of health care. This could mean that weight stigma may impact patients who are overweight or obese the most by causing them to delay or avoid health care. When a patient begins to delay or avoid health care due to experiencing weight stigma, many negative things related to the patient's health could occur. For example, patients may not be receiving the preventative services or screenings that are necessary, or they may not receive the treatments they need for certain conditions. In hypothyroidism patients specifically, patients may experience poorly managed symptoms of hypothyroidism due to not checking in with their providers regarding medication dosages.

Overall, results of this study show that weight stigma experiences during medical visits are associated with a patients' adherence, and the mediators of this relationship are a patients' trust in provider, perceived provider empathy, the depth of the relationship between the provider and the patient, and the patient delaying or avoiding health care. Previous research has shown that weight stigma is negatively related to the provider-

patient relationship, and this study further demonstrates the detrimental effect that weight stigma can have on medical visits. This study adds to previous research by showing that the impact of weight stigma during medical visits reaches further than the relationship between the provider and the patient. The experience of weight stigma during medical visits is associated with lower adherence, which can be damaging for the patient's health. For patients with hypothyroidism specifically, this could mean poorer management of their symptoms including fatigue, dry skin, constipation, or mental fog due to TSH levels not being within the optimal range. In addition, hypothyroidism that is uncontrolled has been associated with more serious conditions including mood disorders, cognitive dysfunction, and cardiovascular disease (Hepp et al., 2018). It is important that patients with hypothyroidism are adherent to their thyroid hormone medication in order to keep their TSH levels within the optimal range in order to manage symptoms of hypothyroidism.

### **Limitations**

This study has several limitations to consider. First, with this being a survey study, participants had to remember possible weight stigma experiences during medical visits which could have been difficult to do. Also, the measurement of weight stigma experiences during medical visits may not have been all-encompassing. For example, a participant may have had an experience with weight stigma that was not asked about on the questionnaire. The measurement of weight stigma experiences during medical visits could be improved by using audio or video recordings of actual medical visits in addition to asking about the providers' perceptions of the patient or the visit. While the use of audio or video recordings of visits could not pick up on negative perceptions or attitudes

that providers hold, the recordings could show if providers merely lectured the patient about their weight without providing any support or resources to help them lose weight. The audio or video recordings could also pick up on any negative comments or teasing that occurred regarding the patients' weight.

Another limitation of this study was that trust in provider was measured using one item. Using a scale that measures trust in health care providers, rather than just one item, could improve the measurement of this variable.

The large percentage of White individuals in this study could also be viewed as a limitation. There is not much data on the typical racial makeup of hypothyroidism, though it does seem to be more common in White individuals (Chaker, Bianco, Jonklaas, & Peeters, 2017). While it is not known why the sample was primarily White, it could be speculated that White individuals seek support on social media platforms more often than other racial or ethnic groups.

Recruiting via social media support groups could also be viewed as a limitation for the study. This could create bias as it is likely that individuals seeking support for their condition are suffering more from their condition than individuals who are not seeking support. It could be assumed that someone who is having trouble treating their hypothyroidism or is having difficulty finding a supportive health care provider would be more likely to seek support through social media, and this could have created bias in our sample.

Another limitation of this study is that it utilized cross-sectional data while conducting mediation analyses. Since cross-sectional data was used, we cannot assume that weight stigma caused the worsened provider-patient relationships or caused a lower

level of adherence, but these should be viewed as associations.

Additionally, in the analyses, BMI was not controlled for. This leads to the possibility that a person's weight status, not necessarily experiencing weight stigma, explained the worsened provider-patient relationship factors.

### **Future Research**

This study examined four possible mediators that help to explain the relationship between weight stigma experiences during medical visits and adherence, but future research should investigate other possible mediators as this study did not include all of the possible mediators for this relationship. Future research could also use audio or video recordings of medical visits to examine weight stigma experiences as they occur. Audio or video recordings of visits could detect any negative comments, teasing, or lecturing about weight in a judgmental manner without providing support, counseling, or resources. It would be interesting to look at audio or video recordings of medical visits in addition to a self-report survey of patient experiences as well as healthcare provider experiences and examine all of these perspectives together in discussions surrounding patient weight issues.

Additionally, future research should examine if there are any differences in weight stigma experiences depending on the reason for the visit or the type of medical visit. For example, one could examine if there is a difference in weight stigma experiences when it is an acute condition versus a chronic condition. Since being overweight or obese is a risk factor for many chronic conditions, providers who are treating a chronic condition may feel even more negatively about the patient's weight. If the patient is there to receive care for a common cold or infection, for example, the

provider may not be so focused on the patient's weight status during that visit, leading to less negative feelings regarding the patient. Future research should also examine if the type of provider makes a difference in whether or not someone experiences weight stigma during a medical visit. For example, researchers might look at stigma experiences from primary care doctors versus bariatric surgeons. There may be differences in stigma experiences between different types of healthcare providers because certain providers may have more education regarding obesity and the treatment of obesity. Providers with more education regarding obesity and the causes of obesity may feel less negatively toward their patients who are overweight or obese, as they may realize that obesity is caused by many factors interacting, not only the patient eating too much or not exercising, for example.

Future research should also examine if a health care provider's weight status affects how they perceive and would treat their patients who are overweight or obese. For example, research should examine if health care providers who are overweight or obese show more empathy to their patients who are overweight or obese.

## **Conclusion**

Results indicate that weight stigma experiences during medical visits are negatively associated with adherence. Experiencing weight stigma during a medical visit was related to certain aspects of the provider-patient relationship, which were then negatively related to adherence. These findings demonstrate the importance of healthcare providers working to become aware of what weight stigma during a medical visit looks like and striving to eliminate these experiences for their patients.

Providers could help to reduce weight stigma in healthcare by using language that

patients feel comfortable with when discussing body weight. For example, studies have shown that patients prefer the words ‘weight’ or ‘high BMI’ rather than ‘fat’ or ‘morbidly obese’ (Puhl, Peterson, & Luedicke, 2013). Using person-first language is also important when discussing weight with patients. For example, saying ‘patient who is overweight’ rather than ‘overweight patient’ is less stigmatizing. Additionally, providers should identify their own biases and work to not convey these to patients. Providers could also educate themselves further on the causes of obesity, and this may help providers realize that the cause may be more than just the patient being weak-willed or lacking self-control. Lastly, providers should avoid placing blame on patients for causing their overweight or obesity (Obesity Action Coalition, 2015). This will help providers to feel less negatively toward their patients who are overweight or obese. It is important that patients with overweight or obesity feel comfortable during medical visits, and providers could help improve their relationships with their patients and therefore could help improve their patients’ levels of adherence by becoming knowledgeable about weight stigma experiences for patients with overweight or obesity.

With high rates of overweight and obesity in the United States and worldwide, it is important to understand how weight status could impact health care experiences for patients with overweight and obesity. It is imperative that bias and stigmatization due to weight status do not influence a patient’s quality of health care. Just as it would be unacceptable to see differences in quality of care due to a person’s race or gender, it should be unacceptable to see differences in quality of care due to a person’s weight status. The results of this study show that patients with overweight and obesity are experiencing weight stigma during medical visits, and that these experiences are related

to their relationship quality with their provider and health outcomes such as their level of adherence.

Table 1.

*Sample Characteristics*

Characteristic	<i>n</i> or <i>M</i>	% or <i>SD</i>
Gender		
Male	18	4.0%
Female	459	95.6%
Age	45	12
Ethnicity		
White	406	89.6%
Black	3	0.7%
Hispanic	23	5.1%
Asian, Pacific Islander, Hawaiian	12	2.6%
American Indian, Alaskan	3	0.7%
Other	6	1.3%
Education		
Less than High School	1	0.2%
High School Graduate	35	7.8%
Some College	131	29.2%
2-year Degree	54	12.0%
4-year Degree	132	29.4%
Master's Degree or Higher	96	21.3%
BMI		
Underweight	2	0.4%
Average Weight	95	19.9%
Overweight	148	31.0%
Obese	232	48.9%
Self-Perceived Weight Status		
Underweight	8	1.7%
Normal Weight	66	13.7%
Overweight	274	56.7%
Obese	135	28.0%

Table 2.

*Descriptive Statistics and Reliability Analyses*

Variable	Scale or Item	<i>n</i>	<i>M</i>	<i>SD</i>	Min.	Max.	$\alpha$
Weight Stigma	Stigma Situations in Health Care Scale (Ferrante et al., 2016)	362	7.3	9.7	0	47	.91
Empathy	Jefferson Scale of Patient Perceptions of Physician Empathy (Kane et al., 2007)	386	3.4	1.1	1	5	.95
Depth of Provider-Patient Relationship	Patient-Doctor Depth-of-Relationship Scale (Ridd et al., 2011)	443	26.3	9.9	8	40	.96
Delay or Avoidance of Health Care	Delay or Avoidance of Health Care Scale (Drury & Louis, 2002)	369	7.1	3.9	5	25	.89
Trust	Using any number from 0-10, what number would you use to rate how much you trust your primary health care provider? (Gudzune et al., 2014)	383	7.4	2.3	0	10	-
Adherence	General Adherence Scale (DiMatteo et al., 1993)	449	3.9	.96	.40	5	.76

Table 3.

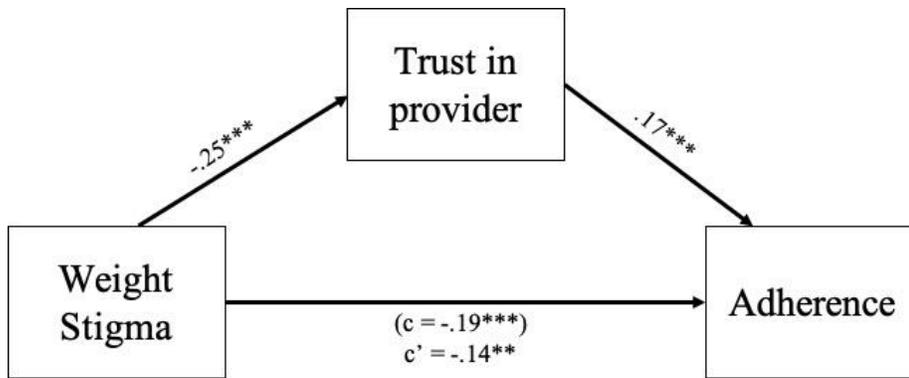
*Correlation Matrix (n = 502)*

Variables	1	2	3	4	5
1. Weight Stigma					
2. Empathy	-.29***				
3. Trust	-.25***	.74***			
4. Depth-of-Relationship	-.25***	.74***	.72***		
5. Delaying or Avoiding Health Care	.46***	-.21***	-.16**	-.14*	
6. Medication Adherence	-.18***	.21***	.20***	.27***	-.27***

\* =  $p$  is significant at the .05 level

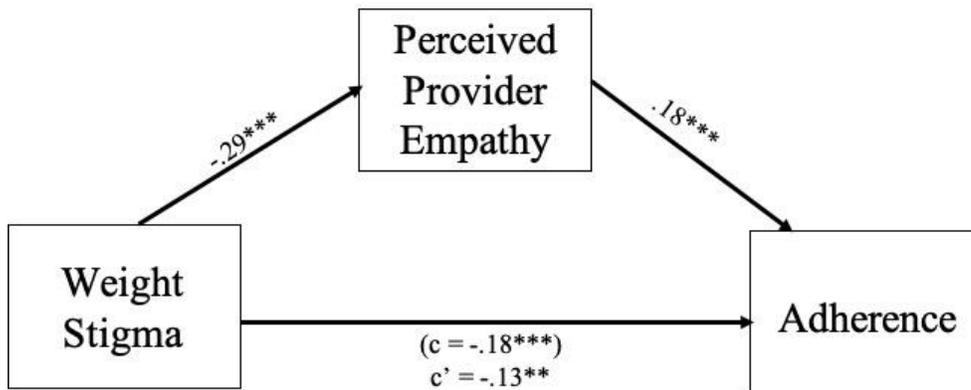
\*\* =  $p$  is significant at the .01 level

\*\*\* =  $p$  is significant at the .001 level



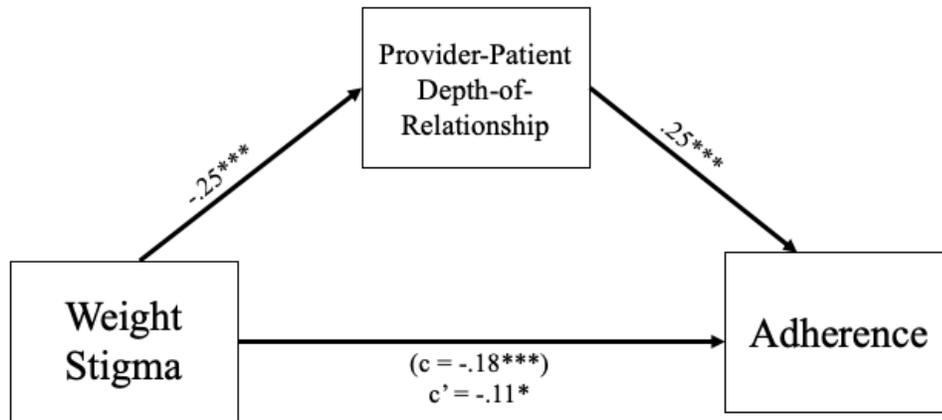
\* =  $p$  is significant at the .05 level  
 \*\* =  $p$  is significant at the .01 level  
 \*\*\* =  $p$  is significant at the .001

Figure 1. Mediation Model for Hypothesis 1. Mediation model with standardized regression coefficients for the relationship between weight stigma and adherence with trust as a mediator.



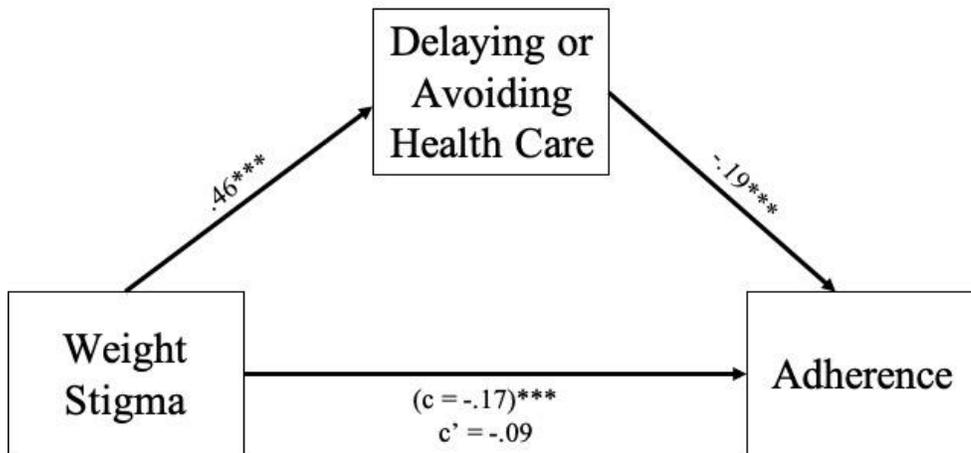
\* =  $p$  is significant at the .05 level  
 \*\* =  $p$  is significant at the .01 level  
 \*\*\* =  $p$  is significant at the .001 level

Figure 2. Mediation Model for Hypothesis 2. Mediation model with standardized regression coefficients for the relationship between weight stigma and adherence with perceived provider empathy as a mediator.



\* =  $p$  is significant at the .05 level  
 \*\* =  $p$  is significant at the .01 level  
 \*\*\* =  $p$  is significant at the .001 level

Figure 3. Mediation Model for Hypothesis 3. Mediation model with standardized regression coefficients for the relationship between weight stigma and adherence with provider-patient depth-of-relationship as a mediator.



\* =  $p$  is significant at the .05 level  
 \*\* =  $p$  is significant at the .01 level  
 \*\*\* =  $p$  is significant at the .001 level

Figure 4. Mediation Model for Hypothesis 4. Mediation model with standardized regression coefficients for the relationship between weight stigma and adherence with patient delaying or avoiding health care as a mediator.

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