AN EVALUATION OF WEIGHT CLASS AND MATERNAL SEXUAL HEALTH DURING PREGNANCY: THE MEDIATING ROLES OF WEIGHT BIAS AND BODY DISSATISFACTION AMONG BLACK AND WHITE WOMEN

By

Kayla E. Sall

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Director of Dissertation: Robert A. Carels, PhD

Major Department: Psychology

## ABSTRACT

Obesity is a national public health issue that adversely affects women of reproductive age and increases the risk for chronic health issues (cardiovascular and metabolic disease; decreased fertility) that can cause short- and long-term consequences during pregnancy. Obesity is also related to sexual functioning, with greater BMI being linked to greater sexual problems. Two potential mediators that may explain the relation between weight and sexual problems during pregnancy are internalized weight bias and body image dissatisfaction. Indeed, how a person perceives their weight and body image as it changes during pregnancy likely affects their sexual health. Importantly, little research has explored the association between these constructs among a racially diverse sample, therefore, the current study sought to examine the relationship between weight class, internalized weight bias, body dissatisfaction, and sexual health (functioning, satisfaction) during pregnancy among a sample of Black and White pregnant women.

Participants were 306 pregnant individuals (0-39 weeks gestation; 40.5% Black, 51.3% White race) living within the United States who were assigned female at birth, sexually active during pregnancy, and between the ages of 18-45 years of age. Participants were drawn from a Qualtrics Panel and completed an online survey assessing obstetric characteristics and sexual- and weight-related constructs. Structural equation modeling was used to examine the indirect effects of internalized weight bias (M1) and body dissatisfaction (M2) on the relation between weight class (pre-pregnancy BMI [X1] and gestational weight gain [X2]) and sexual health (sexual functioning [Y1] and sexual satisfaction [Y2]). Results indicated that greater BMI prior to pregnancy was associated with greater internalized weight bias while participants were pregnant, and this was in turn related to lower sexual satisfaction while pregnant. Additionally, the same trend was found with body dissatisfaction, in that the heavier an individual weighed before pregnancy was related to worse body image during pregnancy, and thus greater sexual dysfunction *and* lower sexual satisfaction. Further, greater weight gained *during* pregnancy predicted women's sexual functioning and sexual satisfaction via body dissatisfaction, however, internalized weight bias only mediated the relationship between gestational weight gain and sexual *satisfaction*. These results indicate that BMI prior to and during pregnancy plays a role in sexual health during pregnancy, and that this relationship is partially explained by perceived level of internalized weight bias and body dissatisfaction. However, minimal moderation effects of race were observed. Altogether, these findings support that future work should aim to prioritize and center Black women's experiences with weight, stigma, and sexual health, through culturally-sensitive recruitment strategies, study methodologies, and measurement and assessment in order to adequately capture Black pregnant women's experiences and better serve their healthcare needs.

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Kayla E. Sall

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Director of Dissertation: Robert A. Carels, PhD
Dissertation Committee Members:
Alex Schoemann, PhD
Linda May, PhD
Lisa Campbell, PhD
Stephanie Wallio, PhD

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# CHAPTER 1: INTRODUCTION

## Obesity as a National Public Health Issue in the United States

Being overweight or obese are chronic health conditions considered to be major public health issues affecting nearly two-thirds of adults in the United States (Centers for Disease Control and Prevention [CDC], 2021a). Obesity disproportionately affects women and racial/ethnic minority individuals, with over 50% of Black/African American women and 44% of Hispanic/Latina women experiencing obesity, in comparison to 33% of White/European American women (Himmelstein et al., 2017). Among women specifically, obesity is characterized by an excess of body fat where fat content equals or exceeds 30-35% of body weight and results from a surplus of calories consumed that is disproportionate to a person's energy expenditure (Corsica & Perri, 2012). Clinically, obesity is assessed and diagnosed in multiple ways. The most prevalent indicator of obesity is the body mass index (BMI) which is calculated by dividing an individual's weight in kilograms by their height in meters squared ($kg/m^2$); this yields a rough estimate of a person's adiposity (CDC, 2021b). BMI is classified into the following categories: underweight (<18.5 $kg/m^2$), normal weight (18.5-24.9 $kg/m^2$), overweight (25.0-29.9 $kg/m^2$), Obese Class I (30.0-34.9 $kg/m^2$), Obese Class II (35.0-39.9 $kg/m^2$), and Obese Class III (>40.0 $kg/m^2$), where a BMI greater than 25.0 is suggestive of excessive adiposity and associated with increased risk of comorbid diseases, morbidity, and mortality (CDC, 2021b).

In addition to BMI, weight and health risk may be measured by waist circumference. Research supports that carrying greater adiposity around the waist or abdomen increases risk of comorbid disease states, where a 35-inch or greater waist circumference in women is indicative of obesity-related disease states (Corsica & Perri, 2012). Further, numerous disease states are

associated with obesity or are predictive of obesity being a health concern compared to those of normal weight. These multiple comorbidities include cardiovascular related issues such as hypertension, high low-density lipoprotein (LDL) cholesterol or low high-density lipoprotein (HDL) cholesterol levels, high triglycerides, as well as high blood glucose levels or type II diabetes, obstructive sleep apnea (OSA), stroke, several types of cancers, leading a sedentary lifestyle, or cigarette smoking, and others not listed here (CDC, 2021c).

Given that overweight and obesity is steadily increasing; this significant public health problem leads to the United States' recognition of an obesity epidemic. Thus, it is crucial to identify highly vulnerable groups and their associated experiences with overweight and obesity. In particular, women of reproductive age (i.e., all women aged 15 – 49 years) are at increased risk for experiencing overweight and obesity (World Health Organization [WHO], 2006). Indeed, obesity is one of the most common medical conditions among this group of women, with 55.8% being overweight or obese, and greater prevalence existing among racial/ethnic minority women (Catalano & Shankar, 2017; WHO, 2006). Thus, a thorough examination of the associated consequences of overweight and obesity among women of reproductive age is warranted.

However, prior to this literature review, the author wants to acknowledge a number of important uses of language throughout this document. First, the author has aimed to use person-first (e.g., individuals living in larger bodies) language throughout this dissertation, to emphasize the importance of respecting and recognizing individuals' personhood and autonomy. Second, this dissertation primarily uses medicalizing language throughout (e.g., "normal weight," people living with "overweight and obesity"). The author recognizes the advancement of the Health at Every Size movement, and the recommended guidelines to (a) reduce use of medical terms, (b)

use language that is affirming and has been reclaimed by individuals living in larger bodies (e.g., fat individuals, fat persons) and importantly, (c) celebrate diverse bodies with the acknowledgment that health exists on a continuum, and cannot always be determined by body size. Given this dissertation primarily focuses on the medical and psychological implications of overweight, obesity, and gestational weight gain, the author recognizes the use of this language as a limitation of the current study.

**Obesity and its Relationship to Sexual Health among Women of Reproductive Age**

Obesity is related to sexual health, with greater BMI being linked to greater sexual dysfunction and poorer sexual satisfaction among women of reproductive age (Rowland et al., 2017; Sarwer et al., 2018). Sexual dysfunction is defined as biological and psychological changes in desire and arousal associated with the sexual response cycle; specifically, disorders of desire, arousal, orgasm, and pain (Esfahani & Pal, 2018; Laumann et al., 1999) affect about 68% of women (Afshar et al., 2017). Relatedly, sexual satisfaction is defined as an emotional or affective response associated with the subjective evaluation of positive and negative aspects of a sexual relationship (Lawrence & Byers, 1995; Shpancer, 2014). Although research on specific mechanisms is scarce, studies have demonstrated that individuals with obesity-related cardiometabolic conditions (e.g., CVD, T2DM, reduced sex hormone production) report greater sexual dysfunction and poorer satisfaction than those without these comorbidities (Rowland et al., 2017). Indeed, BMI has been negatively correlated with specific aspects of female sexual health, including ability to orgasm, lubrication, desire, clitoral sensitivity, and sexual satisfaction (Sarwer et al., 2018). To better understand the relationship between sexual functioning and satisfaction with obesity, it is important to explore the nuances of the human sexual response and

potential mediators of this relationship, namely, weight bias and body appreciation. A detailed review of these subjects follows.

### *Understanding the Human Sexual Response*

There are a few leading models detailing the human sexual response, each of which are beneficial in understanding female sexual desire, arousal, satisfaction, and dysfunction. One of the first models was developed by Masters and Johnson in 1966 and proposed a linear model in which the human sexual response progresses through the following four phases: excitement, plateau, orgasm, and resolution. This model is purely biological in nature, placing its emphasis on the physiological response of the genitals, and involved a sample of predominantly White individuals (Masters & Johnson, 1966). In the 1970s, the Kaplan model emerged and incorporated the addition of biological sexual desire, thus creating another linear model with the emphasis on three phases: desire, excitement, and orgasm (Kaplan, 1979). A significant limitation of the Masters-Johnson-Kaplan model is the lack of psychological and social aspects of a sexual response, and that it continued to be validated among White individuals, again lacking in racial and ethnic diversity. However, a third model, Basson model, emerged in the early 2000s and proposed a circular model of *female* sexual response encompassing biological, psychological, and social aspects (Basson, 2000; Thomas & Thurston, 2016).

Typically, women may relate to a Masters-Johnson-Kaplan model of sexual desire at the beginning of a relationship, where the aspects of desire, arousal, orgasm, and resolution are more likely to present in a linear fashion. However, this model may not always apply to women in longer term relationships, in which desire or interest may not be as spontaneous or may fluctuate more often (Basson, 2000). In the Basson (2000) model, spontaneous sexual desire is multifactorial in nature, resulting from feelings of emotional intimacy with a partner, response to

sexual stimuli, or from being sexually aroused. The model is also circular in fashion, where women experiencing emotional intimacy may then seek out or be more receptive to sexual stimuli. This heightened receptiveness can lead to sexual arousal, which can lead to a possible co-occurrence of arousal and desire, which then causes increased emotional and physical sexual satisfaction. The combination of these factors increases emotional intimacy further, until the cycle continues (Thomas & Thurston, 2016). It should be noted that the Basson (2000) model clarifies that exposure to sexual stimuli often precedes physiological desire or arousal in women and that arousal and desire are not mutually exclusive in nature (i.e., they can occur simultaneously). Even more, this model is differentiated from the Masters-Johnson-Kaplan model given that the former encompasses a biopsychosocial approach whereas the latter presupposes a biological assumption of sexual desire, arousal, and functioning (Thomas & Thurston, 2016).

Ultimately, present research has supported both the Masters-Johnson-Kaplan and Basson models with regard to female sexual response, though researchers should be mindful of the lack of racial diversity among the participant samples. In what seemed like support for both models, Giles and McCabe (2009) evaluated female sexual response among a sample of 404 women of reproductive age, with some endorsing sexual dysfunction and others not. Results initially supported that the majority of women endorsed the Masters-Johnson-Kaplan model, however, when the desire and arousal phases were combined in the Basson model, the sample of women with sexual dysfunction supports the Basson model over the Masters-Johnson-Kaplan model (Giles & McCabe, 2009). In a sample of 157 women, 66.9% of participants reported that their sexual experiences were captured by both the linear and circular models, approximately 27% said the linear model exclusively represented their experiences, 5.4% said the circular

exclusively represented their experiences, and 0.7% said neither model represented their sexual response (Ferenidou et al., 2016). Interestingly, neither Giles and McCabe (2009) or Ferenidou and colleagues (2016) assessed racial diversity among the sample, therefore no conclusions can be drawn about how race relates to these sexual response models.

Despite this limitation, research on the female sexual response has grown immensely over the past few decades, and the importance of sexual health on women's mental health and well-being is increasingly recognized. Although a myriad of factors can influence the relationship between obesity and sexual health, two stand out in particular: the role of weight bias and body dissatisfaction. The following sections summarize these two constructs as potential mediators of this relationship between obesity and sexual health.

### *Possible Mediators of the Relationship between Obesity and Sexual Health*

**Weight Bias as a Mediator of Obesity and Sexual Health.** With the prevalence rates of overweight and obesity increasing over the past several decades, approximately 40% of individuals experience weight bias within the United States (Puhl et al., 2018). Weight bias, also referred to as weight stigma, is defined as negative beliefs, attitudes, or judgments such as implicit stereotypes or explicit discriminatory acts that result in the unfair treatment of individuals living with overweight or obesity (Lehrman, 2021; Puhl et al., 2018). An exploration into how and why weight bias exists is warranted. A predominant theme that has occurred within the United States and Western culture overall is the concept that an ideal female body is slim, yielding the term *thin ideal.* Until the late 19$^{th}$ century, the ideal female figure within the United States could be described as full-bodied or voluptuous. However, a societal shift at the turn of the 20$^{th}$ century occurred and redefined the ideal female body towards a more slender, thinner, and sometimes emaciated form. (Swami, 2015). There are multiple explanations for this cultural shift

in perceptions of female body size and weight, though the prevailing reason can be attributed to the rising film industry and the propagation of this image via mass media. Indeed, the rising Hollywood starlet Twiggy (BMI of 15) served as the pinnacle of the thin ideal (Swami, 2015). Although not as prevalent as in the 1960s and 1970s, the thin ideal is still propagated today, often valued across media platforms, particularly social media (Swami, 2015). Therefore, the United States' obesity epidemic has been juxtaposed against an increase in the idolization of thin bodies compared to fuller figures, leading to a substantial increase in weight bias and stigma (Swami, 2015).

When individuals receive lifelong societal messages or directly experience externalized forms of weight bias (e.g., enacted forms of stigma or discriminatory behaviors), they are at risk of internalizing these negative views of weight (Puhl et al., 2018). Therefore, weight bias internalization involves (1) applying negative attitudes, beliefs, or judgments about weight towards themselves and (2) experiencing self-blame or guilt for their weight status (Puhl et al., 2018). Notably, given the pervasive societal level at which weight bias operates, individuals can be of any weight class (i.e., underweight, normal, overweight, obese) and experience internalized weight bias if they perceive themselves to be heavy (Puhl et al., 2018); though weight bias and discrimination tend to be directed towards individuals who are overweight and obese specifically.

As a result of internalized weight biases and stigma, individuals who are overweight or obese are faced with numerous negative health outcomes (Ciciurkaite & Perry, 2018; Pearl & Puhl, 2018; Puhl & Suh, 2015). For example, a systematic review conducted by Pearl and Puhl (2018) included 74 studies evaluating the effects of internalized weight bias (predominantly measured by the Weight Bias Internalization Scale; WBIS) on various forms of mental and

physical health outcomes. Specifically, the systematic review found 30 studies examining depression and internalized weight bias, among which 28 had positive correlations between these two constructs, even after controlling for BMI. Further, the systematic review found ten studies in which internalized weight bias was positively correlated with anxiety, as well as internalized weight bias predicting anxiety, similarly, when accounting for variance of BMI (Pearl & Puhl, 2018). Notably, the author is unaware of any studies tying internalized weight bias to sexual health outcomes, pointing to a need for more work in this area.

Internalized weight bias is also associated with health risk behaviors. For example, disordered eating, including binge eating or other abnormal eating patterns, is strongly and positively correlated with internalized weight bias (Pearl & Puhl, 2018) and weight stigma (Vartanian & Porter, 2016). Internalized weight bias has also been found to predict eating pathology even after controlling for mental health symptoms such as anxiety and depression, and BMI (Pearl & Puhl, 2018). Further, in a systematic review conducted by Vartanian and Porter (2016), numerous studies demonstrated a link between weight stigma and disordered eating; specifically, weight-related teasing was associated with greater engagement in fasting, binge eating, purging, eating in secret, and feeling out of control compared to those who have not experienced weight-related teasing. Notably, greater internalized weight bias is also associated with decreased motivation to lose weight, fewer weight loss attempts, and some evidence of lower engagement in physical activity (Pearl & Puhl, 2018). In a sample of 111 adults, Vartanian and Novak (2011) found that internalized attitudes of stigma related to appearance and weight were positively correlated with avoidance of exercise, particularly embarrassment in visiting gyms. Furthermore, although multiple studies have demonstrated significant results that internalized weight bias increases with BMI, the relationship is not necessarily linear, and

individuals with greater internalized weight bias are more likely to *perceive* themselves to be heavier than their actual weight (Pearl & Puhl, 2018).

Given the negative mental and physical health outcomes of weight bias, it is important to examine the specific groups of individuals who are most adversely affected. Extant research has well-documented that weight bias and stigma disproportionately affects women, particularly women who are obese, in comparison to men. For example, women with obesity may face poor dating prospects and bias from romantic partners, they may be less likely to date than their thinner peers, or experience lower relationship satisfaction compared to men who are obese (Fikkan & Rothblum, 2012; Puhl & Heuer, 2009). Further, among women with obesity, family members are the most likely source of perpetuating stigmatizing attitudes, with 72% identifying family as the main source of weight stigma (Puhl & Heuer, 2009). Women living with overweight, and obesity also experience weight bias and discrimination within educational attainment and employment; for instance, women who are obese are less likely to be accepted into elite universities, experience lower trends of occupational attainment, and achieve lower hourly and lifetime earnings in comparison to women of lower weight (Fikkan & Rothblum, 2012; Puhl & Heuer, 2009).

Moreover, weight bias appears to affect individuals of varying racial and ethnic groups differently. The majority of research to date has examined weight bias among predominantly White samples, subsequently demonstrating increased rates of weight bias among White individuals, particularly White women (Himmelstein et al., 2017; Puhl et al., 2018). However, a growing area of research has been evaluating the experiences and effects of weight stigma among racially and ethnically diverse samples of individuals. The findings on the role of racial and ethnic identity are not as clear; many studies find mixed results or contradict each other.

Rooted in modified labeling theory, some research suggests an inverse relationship of health-related stigma and power, such that social groups with the least amount of power and social resources will experience a greater degree of stigma (Link et al., 1989). It can therefore be proposed that within the United States, individuals of minoritized or marginalized racial ethnic groups may experience greater externalized forms of stigma related to health and weight, such as discrimination based on weight, and that these experiences may lead to internalized weight bias (Ciciurkaite & Perry, 2018).

Alternatively, some research supports an opposite effect with regard to racial and ethnic identity and internalized weight bias. A review conducted by Fikkan and Rothblum (2012) concluded that although Black/African American and Hispanic/Latina women may weigh more on average than White/European American women, the former groups are more accepting of heavier weights. This may be due to a rejection of White thin ideals, cultural differences, and greater social acceptance of or possibly even affirmation for carrying more weight. It may also be that other forms of discrimination (i.e., racial discrimination) are at the forefront while weight and body discrimination occupy a smaller role in racial and ethnic minority women's lives (Fikkan & Rothblum, 2012). Further, some research supports that Black/African American men may have historically preferred larger or curvier body types because they were perceived as desirable, and yet, recent research has shown a trend of Black college students (both men and women) moving towards acceptance of the thin ideal and rejection of larger body figures (Rosen et al., 1993; Webb et al., 2014). Among a diverse sample of 3,088 Americans, Himmelstein and colleagues (2017) evaluated rates of externalized forms of weight stigma and internalized weight bias. Researchers found that participants experiencing externalized forms of stigma were more likely to be women with higher BMI. Regarding internalized weight bias, participants were more

likely to be White women compared to Black/African American or Hispanic/Latino women. Similarly, in a study conducted by Puhl and colleagues (2018), internalized weight bias was examined within the context of both race and gender among a sample of 3,504 U.S. adults. Within the sample, 72% of participants with high levels of weight bias internalization were women, and White participants had higher weight bias internalization compared to Black/African American and Hispanic/Latino participants. A significant limitation of this study is the lack of intersectionality of gender and racial/ethnic identity, given the results separately examined race and gender. Further, it is quite possible that there are measurement errors in these studies, and that weight bias is not adequately or accurately captured among a racially and ethnically diverse sample, particularly because these screening instruments are largely validated among White samples. In sum, more research is needed to evaluate the effects of racial and ethnic identity and weight bias, particularly internalized weight bias, as the degree to which minoritized women experience weight bias can be a determining factor in the severity of associated negative outcomes.

Given the important influence that weight bias has on negative health outcomes, especially among individuals of greater body weight, it is surprising that there has not been an exploration of internalized weight bias on sexual health outcomes specifically. It is possible however that internalized weight bias operates similarly to body image dissatisfaction, a construct in which weight bias is highly correlated with and yet distinct from. Specifically, internalized weight bias causes self-devaluation of oneself due to body weight, and therefore may inadvertently cause negative psychological associations with sexual activity, and thus poorer sexual functioning and satisfaction, not from a physical nature. Alternatively, given that individuals of greater body weight are more likely to experience sexual dysfunction from a

physiological standpoint, which can then inhibit sexual satisfaction, it is possible that internalized weight bias then exacerbates these existing physical issues through a psychosocial nature, thus worsening sexual functioning and satisfaction. Body image dissatisfaction in contrast has indeed built a strong base of literature demonstrating its relationship with sexual functioning and satisfaction, and a more detailed review of this literature is discussed next.

**Body Appreciation as a Mediator of Obesity and Sexual Health.** Similar to the research on weight bias, the research on women's body image appreciation and dissatisfaction is well-documented, spanning the causes and outcomes of body image disturbances (Fiske et al., 2014; Weinberger et al., 2017). Specifically, girls are taught at a young age to care about their appearance, that femininity is essential to girl- and womanhood, and that hegemonic beauty standards (i.e., features associated with a Eurocentric aesthetic) are physically attractive, popular, and valued (Awad et al., 2015; Ogle et al., 2017). As previously mentioned, these features are often synonymous with the thin ideal (Swami, 2015). As a result, women may internalize this hegemonic ideal of beauty and judge their appearance based on these "ideals," leading to their body satisfaction or perceptions of self-worth. Research supports that women who connect their value to their appearance are likely to have worse body image than those who do not (Avery et al., 2021); and those of greater body weight and living with obesity have greater rates of body dissatisfaction in comparison to those of normal weight (Weinberger et al., 2017). Overall, poor body image, also known as body dissatisfaction, is the attitudinal discontentment with specific aspects of an individual's body (Bergmeier et al., 2020; Fuller-Tyszkiewicz et al., 2012; Meireles et al., 2015).

Perceptions of body image appreciation and dissatisfaction tend to differ among racial and ethnic groups, particularly between women of color and white women. For example, Black

women are often competing between meeting societal hegemonic beauty standards (i.e., White thin ideal) versus beauty standards within the Black community (i.e., slightly larger, or "thick" bodies with feminine appearance) and the associated effects on their body image perceptions (Capodilupo, 2015). Indeed, extant research supports that Black women frequently report greater body image appreciation in comparison to White women, which may be a function of White women internalizing hegemonic beauty standards to a greater degree than Black women as well as Black women finding a larger body size to be acceptable and beautiful (Capodilupo, 2015). However, similar to the limitations of weight bias assessments, it is also possible that the instruments used to assess body image appreciation and dissatisfaction are not capturing what they intend to among Black women and psychometrics may differ among Black women than when used among White women samples.

Altogether, women's perceptions of their body image have a strong influence on their health, including their sexual health outcomes. Given that individuals of greater body weight, particularly those living with obesity are more likely to experience body dissatisfaction in comparison to those of normal weight (Weinberger et al., 2017), and that obesity is strongly associated with sexual dysfunction and poor sexual satisfaction (Rowland et al., 2017; Sarwer et al., 2018), it is possible that body dissatisfaction mediates the relationship between BMI and sexual health outcomes.

## Specific Considerations: The Triad of Pregnancy, Obesity, and Sexual Health

### *Health Risks of Obesity and Weight Gain among Women of Reproductive Age*

A substantial body of literature has accumulated confirming the short and long-term consequences for maternal health and well-being as a result of overweight and obesity; the combination of pre-pregnancy obesity with excessive gestational weight gain can exacerbate

these risks for both mother and fetus. Within the United States, over 60% of pregnant women living with obesity will gain more than the recommended weight (i.e., five to nine kilograms; 11-20 pounds) during the course of pregnancy (Faucher & Mirabito, 2020). Excess weight as well as excessive gestational weight gain are associated with adverse health outcomes. Discussion of these multiple adverse health outcomes can be described from preconception through postpartum.

**Preconception Period.** Prior to conception, women who are obese may have difficulty becoming pregnant and experience risk factors such as anovulation or infertility. Anovulation, or the absence of ovulation, is a form of menstrual irregularity and can occur as a result of metabolic syndrome, including insulin resistance (Jungheim et al., 2012). Metabolic syndrome can lead to polycystic ovary syndrome (PCOS), a disease known to cause menstrual irregularities and infertility (Corsica & Perri, 2012; Jungheim et al., 2012). Further, extant research has demonstrated the negative effects of obesity, via increased levels of leptin, on the hypothalamic-pituitary-ovarian axis, which adversely affects ovulation (Catalano & Shankar, 2017; Jungheim et al., 2012). As a result, women with overweight and obesity may have shorter luteal phases, in which the lining of the uterus thickens to prepare for a possible pregnancy; as well as lower levels of follicle stimulating hormone and luteinizing hormone which serve the purpose of promoting follicle development and ovulation (Catalano & Shankar, 2017; Jungheim et al., 2012).

**Pregnancy (First through Third Trimester).** In addition to obesity-related risk factors during the preconception phase, women may also experience these risk factors during their first (weeks 1-13), second (weeks 14-26), or third trimester (weeks 27 through end of pregnancy). There is a growing body of literature supporting that women who are overweight or obese may

also experience challenges with carrying their pregnancies to term, or at least 37 weeks of gestation. Indeed, these women are at increased risk of experiencing spontaneous abortion (i.e., miscarriage). A systematic review conducted by Catalano and Shankar (2017) found that women with a BMI greater than or equal to 25 had a 1.67 greater risk of experiencing miscarriage compared to women with BMIs of 18-24.9. The systematic review also found that among a cohort study of women experiencing recurrent pregnancy loss, women who were obese had a 58% chance of miscarriage compared to 37% in women of normal weight.

Further, in a separate systematic review conducted by Marchi and colleagues (2015), the authors found that increasing BMI was associated with greater risk of pre-eclampsia, a serious pregnancy-related complication characterized by high blood pressure, swelling in the legs, hands, or feet, and protein in urine. Indeed, risk for preeclampsia was 3-10 times greater for women with obesity compared to women of normal weight. Additionally, in this systematic review gestational hypertension ranged from 4-8 times more likely among women with obesity compared to women of normal weight; additionally, gestational diabetes was found to be approximately four times higher among women with obesity and nine times higher among women with severe obesity (Marchi et al., 2015).

**Peripartum Period.** The peripartum period is described as the period of time shortly before, during, and immediately after the delivery. Here too, women experience obesity-related pregnancy risk factors. In particular, pregnant women who are obese are almost twice as likely to give birth via cesarean section rather than vaginal delivery in comparison to pregnant women of normal weight, although this decision may be due to medical weight bias as opposed to being medically necessary (Catalano & Shankar, 2017; Gaillard et al., 2013; Marchi et al., 2015). Associated with cesarean delivery is the increased risk of infection at the surgical site and

lengthier post-operative wound care among this population. Indeed, clinical trials testing different skin closure techniques or providing supplemental oxygen has unfortunately not decreased the risk for post-surgical infection in patients with overweight or obesity (Catalano & Shankar, 2017).

**Postpartum Period.** The postpartum period is characterized by the first six to eight weeks after giving birth and can be characterized by several obesity-related pregnancy complications. In their systematic review, Catalano and Shankar (2017) found that during the postpartum period obesity can increase risk for deep venous thromboembolism (DVT) and pulmonary embolism (PE), conditions which are also more likely to occur following cesarean delivery. Additionally, women who are overweight and obese may experience barriers to breastfeeding (Catalano & Shankar, 2017). Similarly, Marchi and colleagues' (2015) systematic review supported that women with obesity may have physical challenges after delivery as well, such as large breast size which can cause difficulty with latching, or psychological challenges of being uncomfortable breastfeeding in public places. Regardless of the reason, the literature supports that women with obesity have lower likelihood of initiating breastfeeding and are more likely to stop breastfeeding once started in comparison to women of normal weight (Marchi et al., 2015). Lastly, and potentially the most widely studied postpartum issue is depression, which affects approximately one in seven to eight women after birth (Catalano & Shankar, 2017; CDC, 2021d).

In sum, overweight and obesity are significant health risk factors to women of reproductive age, especially through preconception to postpartum. Bearing these risk factors in mind, it is crucial to examine more closely the nuanced impacts of weight class, reproductive health, and sociocultural attitudes towards this population. Indeed, a significant psychological

consequence that can occur among this population is internalized weight bias and body image concerns. Furthermore, given that the research thus far has focused on a predominantly White perspective, it is important to review how these constructs operate during pregnancy, and how the research reflects racially diverse attitudes and perspectives.

### *Pregnancy and its effects on Sexual Health*

**Sexual Functioning during Pregnancy.** Physiological and psychological changes during pregnancy can influence women's sexual health from antepartum through postpartum, with many women reporting a decrease in frequency of sexual activity, desire, and orgasm (Afshar et al., 2017; Johnson, 2011). Altogether, these changes can lead to poor sexual functioning. Sexual dysfunction affects 68% of women, with some studies noting prevalence rates increase to 91% during pregnancy (Afshar et al., 2017). Sexual function appears to decrease throughout pregnancy, with a steep decline particularly in the third trimester (Chang et al., 2011; Johnson, 2011). The causes and correlates of this decline are multiplicative in nature.

Physical changes that occur during pregnancy, particularly late pregnancy, such as back pain, urinary tract infections, dyspareunia, and fatigue as well as vaginal discomfort or decreased clitoral sensation and libido can reduce sexual function secondarily to decreased interest in sexual activity (Johnson, 2011). Chang and colleagues (2011) examined changes in sexual functioning across trimesters among a sample of 663 Taiwanese pregnant women; results indicated that women reported significantly decreased sexual activity and sexual function during the third trimester of their pregnancy in comparison to their first or second trimester. In a study conducted among 315 German women in their third trimester through four months postpartum, 20-40% were sexually inactive with 26-35% reporting sexual dysfunction; the greatest degree of dysfunction being reported during the third trimester, not during the postpartum phase

(Wallwiener et al., 2017). Women being sexually inactive and experiencing sexual dysfunction during the third trimester more so than in the postpartum phase may be attributed to increased physical discomfort in pregnancy, or a response to a challenging life transition (e.g., childbirth, parenthood, changes in family dynamics, etc.), and physical fatigue. Further, hormonal changes in pregnancy cause specific physical symptoms such as nausea, vomiting in the first trimester, weight gain, breast tenderness, or decrease in vaginal sensation, each of which can decrease desire and arousal and lead to sexual dysfunction in pregnancy (Johnson, 2011). Additionally, psychological changes may cause sexual difficulties in pregnancy. These include anticipatory anxiety about childbirth and motherhood, insufficient support from a romantic partner, reduced self-esteem, and concerns about health status, particularly weight gain and BMI, and body image concerns (Johnson, 2011).

Despite the growing body of research examining pre-pregnancy weight and gestational weight gain, and its effects on numerous health outcomes among pregnant women, one area that tends to be limited is the impact of weight class on sexual function during pregnancy. In the few studies that examine this relationship, women who are overweight or obese appear to report less sexual functioning compared to women of normal weight. Indeed, a study conducted by Ribeiro and colleagues (2015) examined the role of maternal BMI in sexual functioning among 105 Brazilian overweight and 118 normal weight pregnant women in the second and third trimesters. Overall, 64% of overweight women experience sexual dysfunction compared to 48% of their normal weight counterparts. This effect was magnified in the third trimester, during which 67% of overweight women reported more severe sexual dysfunction in comparison to 41% of normal weight women. Areas of dysfunction for overweight women were predominantly in desire, arousal, lubrication, orgasm, and dyspareunia (Ribeiro et al., 2015).

In a similar study, sexual dysfunction was examined among a sample of 167 Brazilian pregnant women (67 normal weight, 76 overweight) with gestational diabetes (Ribeiro et al., 2014). Results demonstrated a significant difference in sexual dysfunction, such that 60.5% of overweight women compared to 41.8% of normal weight women were determined to be at risk for sexual dysfunction (mean score on the Female Sexual Functioning Index of less than or equal to 26). Specifically, overweight women reported greater problems of desire and lubrication compared to normal weight women, which may be a result of the lower levels of estrogen that is associated with obesity (Ribeiro et al., 2014). These results indicate that overweight and obesity may be a risk factor for poor sexual functioning among pregnant women with comorbid health conditions, specifically gestational diabetes. Although, it should be noted that rates of sexual dysfunction appear comparable to samples of overweight and normal weight pregnant women without gestational diabetes (Ribeiro et al., 2015).

**Sexual Satisfaction during Pregnancy.** Along with changes in sexual functioning during pregnancy, it is also common for pregnant women to experience changes in sexual satisfaction (i.e., the emotional or affective response associated with the subjective evaluation of positive and negative aspects of a sexual relationship; Lawrence & Byers, 1995; Shpancer, 2014). In a previously cited review conducted by Johnson (2011), sexual satisfaction was markedly declined during pregnancy and as gestation progressed; rates of reduced sexual satisfaction were reported among 35% in 1st, 30% in 2nd, and 55% in 3$^{rd}$ trimesters of pregnancy. Interestingly, regardless of gestational week, women who initiated sexual activity more often with their partner were more likely to report increased sexual satisfaction in comparison to women whose partners initiated sexual activity more frequently (Johnson, 2011).

Reduced sexual activity during the first trimester and greater maternal age are predictors of sexual satisfaction during pregnancy (Johnson, 2011).

Notably, the most well-studied predictor of a woman's sexual satisfaction is her relationship with her partner; yet, sexual satisfaction among couples during pregnancy is an understudied area of research. Although sexual activity and functioning tends to decrease during pregnancy, pregnant couples are not entirely devoid of sexual desire and arousal (Jawed-Wessel et al., 2019). As such, some studies show that negative attitudes towards sex during pregnancy can inhibit participation in sexual behaviors and therefore sexual satisfaction (Jawed-Wessel et al., 2019). In a study conducted among 116 pregnant couples, of which the participants were overwhelmingly White (91.2%), the relation between attitudes towards having sex during pregnancy, sexual behaviors, and sexual satisfaction were evaluated. Sexual behaviors including kissing, vaginal fingering, and vaginal intercourse mediated the relation between attitudes towards sex and sexual satisfaction, such that positive attitudes towards sex during pregnancy significantly increased a couples' engagement in these sexual behaviors, which then improved sexual satisfaction among couples (Jawed-Wessel et al., 2019).

### *Weight Bias during Pregnancy*

Though current literature has thoroughly examined the prevalence and correlates of weight bias among women, research on weight bias and the associated negative consequences is surprisingly limited within the context of pregnancy. Pregnancy is a critical period for weight gain to support the healthy development of the fetus. During this obesity epidemic almost a quarter of women begin their pregnancy as overweight or obese, which changes the trajectory for weight gain during pregnancy in comparison to women of normal weight (Cantor et al., 2021; Kim et al., 2007). Specifically, comorbid conditions play a role in their reproductive health, with

women who are obese tend to experience and report a greater number of comorbid conditions including type II diabetes, hypertension, hyperlipidemia, cardiovascular disease, chronic kidney disease, obstructive sleep apnea (CDC, 2021c), as well as reproductive-specific conditions such as endometrial cancer, risk of infertility, miscarriage, and birth defects (Cardozo et al., 2013). Overweight and obesity paired with these comorbid conditions can further complicate or lead to high-risk pregnancies characterized by preeclampsia, gestational diabetes, prelabor rupture of membranes, cesarean delivery, or fetuses that are either small or large for gestational age (Gaillard et al., 2013; Marchi et al., 2015). Overweight and obesity along with these comorbid conditions can lead to significant stigma from healthcare providers towards pregnant women, which may then cause internalized weight bias (DeJoy & Bitttner, 2015; Ferrante et al., 2016; Mulherin et al., 2013; Puhl & Heuer, 2009). Therefore, women of differing pre-pregnancy BMIs may experience weight stigma in different ways: (1) via stigmatization that occurs among women of normal BMI gaining weight during pregnancy and (2) via stigmatization among women who begin their pregnancy as overweight or obese.

Given the paucity of research regarding weight bias within the context of pregnancy, it should be noted that among the minimal existing literature, most studies focus on externalized forms of weight stigma, rather than internalized weight bias. Incollingo Rodriguez and colleagues (2020) examined weight-stigmatizing experiences among 143 pregnant and 358 postpartum women. Notably, 67.3% of the sample identified as White, while 2.8% identified as Black. The authors found that nearly two thirds of women experienced weight stigma from at least one of the following sources: family, strangers, the media, or society in general. Further, for women who began pregnancy at a heavier weight (i.e., were overweight or obese), they experienced weight stigma from more sources than women who began pregnancy at a normal

weight. Additionally, the researchers found that self-perceived weight mediated the relationship between pre-pregnancy BMI and number of sources of weight stigma, indicating that how pregnant and postpartum women perceive their own weight may influence the extent of their weight stigmatized experiences (Incollingo Rodriguez et al., 2020). In another study conducted among pregnant and postpartum women, Nippert and colleagues (2021) examined media-based weight stigma specifically. Among a sample of 123 predominantly White pregnant and postpartum women, the most prevalent themes of media-based stigma included ideal appearance of pregnant bodies;  pressure to quickly lose weight and attain pre-pregnancy physical features; as well as media outlets praise celebrities for achieving post-pregnancy thinness quickly. These results demonstrate that media sources are capable of propagating a misinformed idealization of women's pregnancy narratives, with experiences of weight stigma widening the gap between realistic pregnancy journeys and the idolized version.

To date, there has been minimal research evaluating internalized weight bias among pregnant women, as compared to externalized forms of bias and discrimination. Dieterich and colleagues (2021) longitudinally examined the relationship between internalized weight bias and breastfeeding outcomes among a sample of 95 women during and after pregnancy. To the author's knowledge, this is the first study to utilize the Weight Bias Internalization Scale (Durso & Latner, 2008) among pregnant women; results demonstrated that WBIS scores were temporally reliable and had high internal consistency from pre (Cronbach's $\alpha = .81$) to postpartum (Cronbach's $\alpha = .81$) periods.

Given the well-documented literature supporting that weight stigma can lead to adverse health outcomes, it is imperative to examine outcomes relevant to pregnancy, such as breastfeeding difficulties and depression (Guelinckx et al., 2012; Incollingo Rodriguez et al.,

2019). A significant health behavior outcome related to weight stigma is breastfeeding. Feeling stigmatized can negatively impact communication with obstetric and perinatal providers, and cause women to feel less inclined to address breastfeeding challenges related to their weight or weight retention (Dieterich & Demirci, 2020; Garner et al., 2017). Women with obesity are also less likely to be encouraged to breastfeed or exposed to breastfeeding practices (Kair & Colaizy, 2016) and not as likely to initiate breastfeeding in comparison to women of normal weight (Guelinckx et al., 2012).

Regarding mental health, in a longitudinal study Incollingo Rodriguez and colleagues (2019) examined the relationship between experiences of weight discrimination and postpartum health among 214 pregnant women, where 50.5% identified as Black, 23.4% as Latina, and 26.2% as White. Results supported that weight-related stigmatizing experiences predicted greater postpartum depressive symptoms at 1 month and 1 year postpartum, as well as greater retention of weight gain. These findings are concerning given the associated negative long-term maternal and family health outcomes associated with postpartum depression. In general, there is very little research available on the effects of internalized weight bias on pregnant women's health, particularly through a perspective of racial/ethnic identity, however the racial diversity of this particular sample is indeed a strength. Therefore, further research is greatly needed to address this gap.

### *Body Appreciation and Dissatisfaction during Pregnancy*

Research specifically examining body image among pregnant women is more limited. Distinctive physical changes accompany pregnancy, such as an expanding abdomen and weight gain, as well as numerous symptoms including nausea, vomiting, constipation, backaches, among others, thus prompting women to reevaluate their self-perceptions of body image (Bergmeier et

al., 2020; Fuller-Tyszkiewicz et al., 2012; Gjerdingen et al., 2009; Hodgkinson et al., 2014). For some women, this can mean experiencing body dissatisfaction. Several causes and correlates of body dissatisfaction among pregnant women, including emotional, behavioral, physical, and social and environmental factors, have been discovered, with findings detailed below.

**Emotional and Behavioral Factors.** Body dissatisfaction has been consistently correlated with anxious and depressed mood states among pregnant women. Indeed, a systematic review conducted by Fuller-Tyszkiewicz and colleagues (2012) discovered a bidirectional predictive effect between depressive symptoms and body dissatisfaction, such that the presence of either early in pregnancy predicts occurrence of the other later in pregnancy (Fuller-Tyszkiewicz et al., 2012). Further, in a longitudinal study conducted among 1,371 pregnant women, Chan and colleagues (2020) evaluated body dissatisfaction across stages of pregnancy and found that dissatisfaction was positively associated with both prenatal and postpartum anxiety and depressive symptoms, indicating high prevalence of the negative mental health outcomes that can arise when pregnant women experience poor body image. Of note, this study was conducted among a sample of Chinese pregnant women, however, the results are comparable to levels of distress and dissatisfaction in Western samples.

Regarding health behaviors, women who exercised often in the preconception phase were more likely to be satisfied with their body compared to women who did not exercise often prior to pregnancy (Fuller-Tyszkiewicz et al., 2012). Relatedly, in a review and meta-analysis conducted by Sun and colleagues (2018), physical activity and body dissatisfaction were examined within a total sample of 406 pregnant women. Results demonstrated a positive correlation between body image and physical activity, such that pregnant women in the high exercise group had better body image than pregnant women in the low exercise group (Sun et al.,

2018). Smoking behaviors have also been related to body image and dissatisfaction, such that women with greater body dissatisfaction had greater engagement in smoking throughout their pregnancies, compared to women with less body dissatisfaction during their pregnancies (Fuller-Tyszkiewicz et al., 2012). Indeed, smoking has been used as a weight loss strategy, since nicotine curbs appetite and can lead to weight loss (Audrain-McGovern & Benowitz, 2011; Seeley & Sandoval, 2011).

**Physical Factors.** Research findings are mixed when detailing the effects of physical symptoms (i.e., nausea, poor sleep quality, fatigue, and vomiting) associated during pregnancy and the effect on body dissatisfaction; some studies have demonstrated a correlation between pregnancy symptoms and body dissatisfaction while others have not (Fuller-Tyszkiewicz et al., 2012). Further, there appears to be a relationship between stage of pregnancy, breastfeeding, and body dissatisfaction, such that as women with greater levels of body dissatisfaction become later in gestation, they gain more weight and therefore they are less inclined to breastfeed following the birth of their baby (Fuller-Tyszkiewicz et al., 2012). Relatedly, women's postpartum body dissatisfaction has been associated with breastfeeding in a similar manner to during pregnancy. In a review conducted by Gjerdingen and colleagues (2009), women with greater body dissatisfaction, compared to those who were more satisfied with their body image, were less likely to choose to breastfeed after delivery; similarly, women with intentions to bottle-feed had greater body image concerns than women intending to breastfeed. This choice related to breastfeeding or not may be due to numerous reasons, such that women with obesity may find breastfeeding to be uncomfortable in public settings or embarrassing or feel that it would negatively impact their sexuality (e.g., sexual satisfaction, desire for intimacy, capacity for arousal, etc.). Further, studies have demonstrated that body mass index is positively correlated

with body dissatisfaction; however, the degree to which BMI or body dissatisfaction predict choice to breastfeed remains unclear (Fuller-Tyszkiewicz et al., 2012).

**Social-environmental Factors.** Social and environmental factors affect pregnant women's experiences with body image concerns and dissatisfaction. For example, body dissatisfaction has been negatively correlated with weak social support networks among pregnant women (Fuller-Tyszkiewicz et al., 2012). Expectedly, experiences of weight-related teasing or appearance-related criticism during pregnancy is predictive of feeling less attractive or feeling "fat," among women (Fuller-Tyszkiewicz et al., 2012). In a systematic review and meta-synthesis conducted by Hodgkinson and colleagues (2014), three unique themes were identified related to women's experiences of their pregnancy and postpartum body image: (1) the role of woman versus mother, (2) the publicized nature of "fatness" versus pregnancy, and (3) women's perceptions of their control over pregnancy-related bodily changes.

In the first theme, women appeared to negotiate their roles and identities within the context of pregnancy through their perceptions of femininity and womanhood. For example, negative comments from pregnant women's husbands played a role in whether these women saw themselves as sexually attractive or no longer being able to employ body ideals. In contrast, increased body satisfaction occurs when women's partners were more complimentary or supportive (Hodgkinson et al., 2014).

The second theme of pregnancy versus "fatness" encompassed how pregnant women perceive socially constructed versions of the pregnant body. For example, women differentiated between pregnancy and fatness; the extent to which gestational weight gain was attributed to the growing fetus was associated with normative pregnancy changes and deemed acceptable,

whereas fatness was seen as weight gained in undesirable areas (i.e., increase in arm fat) and perceived as unacceptable, thus leading to body dissatisfaction.

The final theme was women's control over pregnancy-related body changes, in which women reported a constant struggle between feeling in and out of control of their pregnancy weight gain expectations. Understandably, women experienced greater distress when they perceived themselves as having less control of their pregnancy-related body changes. Further, women reported experiences of needing to "reclaim" their postpartum body as well, sometimes to the degree of needing to achieve a slimmer figure than that of their pre-pregnancy body (Hodgkinson et al., 2014). In sum, social-environmental expectations of pregnancy-related body changes appear to significantly impact pregnant women's expectations of their bodily changes, as well as overall increased dissatisfaction with their pregnant body.

Further, Although partner satisfaction appears to impact sexual satisfaction, body image concerns also play a role in sexual satisfaction among women. Indeed, when women feel positively about their body, they tend to experience a greater level of sexual satisfaction (Woertman & van den Brink, 2012). Further, women who endorse a positive attitude towards their bodily appearance during sexual activity also experience greater sexual satisfaction (Woertman & van den Brink, 2012). However, the research examining body satisfaction and sexual satisfaction among pregnant women is very limited. A cross-sectional study conducted by Radoš, and colleagues (2014) evaluated these constructs among a sample of 165 pregnant women in their third trimester. Within the sample, 79.3% reported decreased sexual activity and 47% reported decreased sexual satisfaction compared to pre-pregnancy. Interestingly, sexual satisfaction was more strongly and positively correlated with relationship satisfaction compared to body image, which was a weak correlation (Radoš et al., 2014). In addition to body

satisfaction, some research supports that overweight and obesity may negatively impact sexual satisfaction, however, the research is both minimal and mixed (Kolotkin et al., 2012).

Overall, a well-developed body of literature has substantiated the relationship between internalized weight bias, body image and dissatisfaction, and associated negative mental health outcomes, which has been predominantly studied among White/European American women (Bergmeier et al., 2020; Dieterich et al., 2021; Fuller-Tyszkiewicz et al., 2012; Gjerdingen et al., 2009; Guelinckx et al., 2012; Hodgkinson et al., 2014; Incollingo Rodriguez et al., 2019). To date, less attention has focused on sexual health outcomes specifically within the context of weight bias and body dissatisfaction; though some research would suggest that greater endorsement of hegemonic beauty ideals would lead to lower sexual satisfaction (Avery et al., 2021). Additionally, fewer studies have evaluated these constructs during pregnancy, a time where physical changes occur dramatically to a woman's body, including changes in sexual health. Next, a discussion about how to address the lack of racial diversity within these topics, and how to center Black women's experiences specifically is warranted.

## The Black Feminist-Womanist Research Paradigm: A Framework to Address Limitations of the Present Literature

Extant literature reflects the relationship between weight class and sexual functioning/satisfaction, and that weight bias and body dissatisfaction can influence sexual health as well. In addition, obesity is more greatly prevalent among women of color compared to White women. As a result, there has been an increase in research that attempts to evaluate health equity issues among these constructs, and yet little research does so by using an intersectional lens (e.g., such as by considering how gender and racial/ethnic identity function together and influence lived experiences). Instead, most weight, body appreciation, and sexual health research remains

predominantly focused on White women, inadequately addresses the state of measurement of these constructs among Black women, and if studies do include a more racially diverse sample, the content tends to be focused on poorer health outcomes rather than a strengths-based or positive approach.

For example, research devoted to examining sexuality among Black women has traditionally evaluated behaviors associated with negative sexual health outcomes, such as sexually transmitted infections (e.g., human immunodeficiency virus [HIV] which untreated, can eventually cause acquired immunodeficiency syndrome [AIDS]) or unintended pregnancies (Townes et al., 2020). Indeed, a systematic review of sexual health interventions intended for racial/ethnic minoritized individuals revealed an overwhelming number of studies aimed towards reducing sexual risk-taking behaviors, particularly increasing education about HIV transmission (McCuistian et al., 2021). When studies do evaluate sexual functioning or satisfaction instead of sexual risk behaviors, they sometimes use harmful language. As an example, in a sample of 1,473 women, women of color were labeled as "lower status" and reported poorer sexual satisfaction than their "higher status" White counterparts (Fahs & Swank, 2011). As the reader can see, even the language used within these studies is problematic, despite their efforts to study a subject that is sorely in need of more scholarship. Alternatively, in a study involving 96 Black women from the 2015 Sexual Exploration in America Study (SEAS), approximately 75% of participants rated themselves as satisfied with their sexual relationship, and two-thirds rated their overall sex life as high (Townes et al., 2020).

These two studies represent a mixed consensus regarding sexual satisfaction among women of color, and it is notable that very few studies evaluate these constructs. To the author's knowledge, there are no studies specifically evaluating sexual functioning and satisfaction

among Black women exclusively, let alone among Black women who are pregnant. This gap in knowledge results in a lack of understanding of Black maternal sexual health and weight-related outcomes. Therefore, a major component of this dissertation is to address this gap of the literature using a Black Feminist-Womanist (BFW) Research Paradigm, theorized by Lindsay-Dennis (2015).

The BFW merges theories of Black Feminist Thought (Collins, 2000) and Womanism (Phillips, 2006), and grew out of a need for developmental theories that center African American girls' experiences and health. Black Feminist Thought emphasizes ethics of caring and responsibility in addition to using dialogue that adequately addresses "knowledge claims" and concrete experiences of Black girls (Collins, 2000). Womanism on the other hand further centers the developmental experiences of Black girls by recognizing the eventual experiences of Black women in society and how they problem solve, including experiences of oppression. In sum, "Black feminism and Womanism acknowledge that African American girls inherit an unearned legacy of race, gender, and class oppression as descendants of the only group of women that were enslaved and brought to the United States to work, to produce, and to reproduce" (Lindsay-Dennis, 2015, p. 511).

Therefore, the author recognizes that this dissertation only serves as an initial step in providing information to address the problem of weight-related constructs and sexual health among Black pregnant women. In an effort to begin to pursue this research endeavor, the specific goals of this dissertation are detailed next.

**Review of the Literature and Goals of the Current Dissertation**

A thorough review of the literature reveals that obesity is a national public health issue that disproportionately affects Black women, with approximately 50% of Black women

compared to 33% of White women experiencing obesity in the United States (Himmelstein et al., 2017). Among women of reproductive age (18-45), obesity increases risk for chronic diseases including cardiovascular disease, diabetes, and decreased fertility that can cause short and long-term consequences for maternal health during and after pregnancy. In line with the CDC's Racial and Ethnic Approaches to Community Health (REACH) program, further research is needed to reduce rates of obesity and the disparities among Black and White women.

Further, obesity is related to sexual functioning, with greater BMI being linked to greater sexual dysfunction among women of reproductive age (Rowland et al., 2017; Sarwer et al., 2018). Although research on specific mechanisms is scarce, studies have demonstrated that individuals with obesity-related cardiometabolic conditions (e.g., CVD, T2DM, reduced sex hormone production) report greater sexual dysfunction than those without these comorbidities (Rowland et al., 2017). Indeed, BMI is negatively correlated with specific aspects of female sexual functioning, including ability to orgasm, lubrication, desire, clitoral sensitivity, and sexual satisfaction (Sarwer et al., 2018). Therefore, two potential mediators that may explain the relationship between obesity and sexual functioning are internalized weight bias and body image appreciation. Specifically, obesity is strongly and positively linked to internalized weight bias and body dissatisfaction, and separately, body dissatisfaction has been strongly negatively linked with sexual functioning.

Additionally, pregnancy adversely affects sexual functioning among women. Approximately 3.7% of U.S. women (over 6 million) will become pregnant in a given year (Curtin et al., 2013), with the vast majority of pregnant women experiencing fluctuations and a general downward trend in sexual functioning across trimesters in comparison to non-pregnant controls. These changes in sexual functioning are characterized by decreases in desire, arousal,

satisfaction, and increased pain during intercourse. Together, research has indicated that 64% of pregnant women with overweight and obesity report problems with sexual functioning (i.e., decreased ability to orgasm, lower desire and arousal) relative to only 48% of pregnant women of normal weight (Ribeiro et al., 2014). Importantly, little research has explored the association between obesity and sexual functioning among a racially diverse sample (Black, White race), and the author of this dissertation is unaware of any research examining these effects during pregnancy. Therefore, the goal of this dissertation is to examine the relationship between weight class, internalized weight bias, body dissatisfaction, and sexual health constructs (i.e., sexual functioning and sexual satisfaction), with exploratory aims of how these variables function among a sample of Black/African American and White/European American pregnant women. Specific aims and hypotheses are as follows:

***Aim 1***

Examine the extent to which pre-pregnancy BMI and gestational weight gain are associated with internalized weight bias, body dissatisfaction, sexual satisfaction, and sexual functioning among pregnant women.

**Hypothesis 1**. BMI and weight gain will be related to internalized weight bias.

**(a)** Greater pre-pregnancy BMI will be associated with more weight bias.

**(b)** Greater gestational weight gain (by percentage of pre-pregnancy weight) will be associated with more internalized weight bias.

**Hypothesis 2**. BMI and weight gain will be related to body dissatisfaction.

**(a)** Greater pre-pregnancy BMI will be associated with more body dissatisfaction.

**(b)** Greater gestational weight gain (by percentage of pre-pregnancy weight) will be associated with more body dissatisfaction.

**Hypothesis 3**. BMI and weight gain will be related to sexual functioning.

**(a)** Greater pre-pregnancy BMI will be associated with poorer sexual functioning.

**(b)** Greater gestational weight gain (by percentage of pre-pregnancy weight) will be associated with poorer sexual functioning.

**Hypothesis 4**. BMI and weight gain will be related to sexual satisfaction.

**(a)** Greater pre-pregnancy BMI will be associated with less sexual satisfaction.

**(b)** Greater gestational weight gain (by percentage of pre-pregnancy weight) will be associated with less sexual satisfaction.

***Aim 2***

Examine internalized weight bias and body dissatisfaction as predictors of sexual health.

**Hypothesis 5.** Internalized weight bias will predict sexual health.

**(a)** Internalized weight bias will predict sexual functioning, where greater weight bias predicts poorer sexual functioning.

**(b)** Internalized weight bias will predict sexual satisfaction, where greater weight bias predicts lower satisfaction.

**Hypothesis 6.** Body dissatisfaction will predict sexual health.

**(a)** Body dissatisfaction will predict sexual functioning, where greater body dissatisfaction predicts poorer functioning.

**(b)** Body dissatisfaction will predict sexual satisfaction, where greater body dissatisfaction predicts lower satisfaction.

***Aim 3***

Using structural equation modeling, evaluate a parallel mediation model to examine the indirect effects of internalized weight bias and body dissatisfaction on the relationship between weight

class (pre-pregnancy BMI and gestational weight gain) and sexual health (sexual functioning and sexual satisfaction).

**Hypothesis 7.** Weight class (pre-pregnancy BMI [$X_1$] and gestational weight gain [$X_2$]) will indirectly affect sexual health (sexual functioning [$Y_1$] and sexual satisfaction [$Y_2$]) via parallel mediators, internalized weight bias ($M_1$) and body dissatisfaction ($M_2$), such that greater weight class (greater pre-pregnancy BMI and greater gestational weight gain) will lead to heightened internalized weight bias and body dissatisfaction, which in turn leads to worsened sexual health outcomes (i.e., decreased sexual satisfaction and sexual functioning).

***Exploratory Aim 4***

Using multiple group analysis, examine differences between Black/African American pregnant women and White/European American pregnant women, if indicated by sample size and adequate power (see Figure 1 for a depiction of this proposed model).

**Hypothesis 8.** Relationships between pre-pregnancy BMI, gestational weight gain, internalized weight bias, body dissatisfaction, and sexual functioning, and sexual satisfaction as constructs will differ across racial groups (Black/African American women and White/European American women).

***Exploratory Aim 5***

Examine race (Black, White) as a proxy for the experience of pregnancy and sexual functioning as a moderator of the parallel mediation proposed in Hypothesis 7 (see Figure 1 for a depiction of this proposed model).

**Hypothesis 9.** Race will moderate the $a_1$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between pre-pregnancy BMI and internalized weight bias)

such that the size of the relation between pre-pregnancy BMI and IWB will be stronger among White/European American women than Black/African American women.

**Hypothesis 10.** Race will moderate the $b_1$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between IWB and sexual functioning) such that the size of the relation between IWB and sexual functioning will be stronger among White/European American women than Black/African American women.

**Hypothesis 11.** Race will moderate the $a_2$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between pre-pregnancy BMI and body dissatisfaction) such that the size of the relation between pre-pregnancy BMI and body dissatisfaction will be stronger among White/European American women than Black/African American women.

**Hypothesis 12.** Race will moderate the $b_2$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between body dissatisfaction and sexual functioning) such that the size of the relation between body dissatisfaction and sexual functioning will be stronger among White/European American women than Black/African American women.

**Hypothesis 13.** Race will moderate the $a_3$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between gestational weight gain and internalized weight bias) such that the size of the relation between gestational weight gain and IWB will be stronger among White/European American women than Black/African American women.

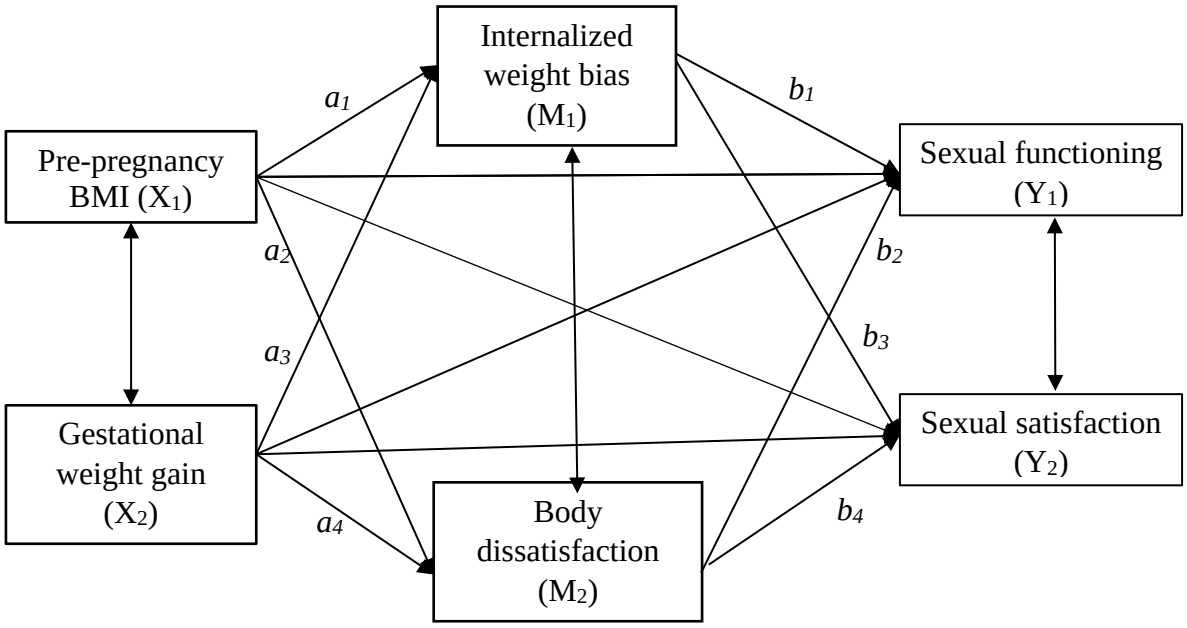
**Hypothesis 14.** Race will moderate the $b_3$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between IWB and sexual satisfaction) such that the size of the relation between IWB and sexual satisfaction will be stronger among White/European American women than Black/African American women.

**Hypothesis 15.** Race will moderate the $a_4$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between gestational weight gain and body dissatisfaction) such that the size of the relation between gestational weight gain and body dissatisfaction will be stronger among White/European American women than Black/African American women.

**Hypothesis 16.** Race will moderate the $b_4$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between body dissatisfaction and sexual satisfaction) such that the size of the relation between body dissatisfaction and sexual satisfaction will be stronger among White/European American women than Black/African American women.

**Figure 1**

*Structural Equation Model*



# CHAPTER 2: METHODS

## Participants

Participants were recruited through a Qualtrics Panel and completed an online survey that assessed participants' obstetric characteristics of their pregnancy, sexual activity, sexual functioning, sexual satisfaction, and weight-related constructs. A large number of participants (*n* = 511) entered the online survey in total. Participant selection was conducted iteratively, from June 2022 through October 2022. Several participants were removed by the Qualtrics team due to not meeting inclusion criteria (i.e., between ages 18-45, assigned female at birth, currently pregnant, currently sexually active, BMI greater than or equal to 17.5), and a more detailed data cleaning process was completed by the author of this dissertation, due to evidence of questionable and dual entry responses. For example, some participants reported a weight of 50 pounds prior to pregnancy and 30 pounds at the time of survey, indicating false data or errors in survey completion. The final sample included 306 pregnant individuals (0-39 weeks gestation) living in the United States who were assigned female at birth, sexually active during pregnancy, and were between the ages of 18 to 45 years of age.

Within the sample, participants had a mean age of 31.4 years, (*SD* = 6.09) and were racially diverse, with 40.5% (*n* = 124) of Black/African American background, 51.3% (*n* = 157) of White/European American background, 7.8% (*n* = 24) identifying Latina/Hispanic as their race, and the remaining participants (*n* = 8) identifying as another racial background (e.g., Middle Eastern/North African, South Asian, etc.). A majority of the sample identified as heterosexual (83.7%; *n* = 256), while others identified as asexual/aromantic (3.9%; *n* = 12), bisexual/biromantic (8.9%; *n* = 27), gay or lesbian (2%; *n* = 6), and pansexual/queer or another non-heterosexual identity (1.3%; *n* = 4). Further, the sample was diverse in terms of trimester of

pregnancy, with 24.2% (*n* = 74) in their first trimester, 46.1% (*n* = 141) in their second, and 29.7% (*n* = 91) in their third trimester.

## Procedure

IRB approval was obtained from East Carolina University (ECU; See Appendix A). Participants were recruited via a Qualtrics Panel that specified sample criteria of a racially diverse group of pregnant women (assigned female at birth) between the ages of 18-45 who were sexually active during pregnancy and had a pre-pregnancy BMI >17.5. Participants were asked to provide their electronic consent via a form that explains the purpose of the present study and provided the principal investigator's contact information (See Appendix B). After they consented to participate, they completed a series of online measures including demographic questions, obstetric characteristics, and a series of questionnaires evaluating their degree of internalized weight bias, body dissatisfaction, sexual satisfaction and dysfunction experiences, and height and weight to calculate BMI. The online survey took an average of 22 minutes to complete. Once they completed the survey, all participants were provided with a custom-made resource form which provided information about national resources for pregnant women, including resources for seeking help related to peri- and postpartum mood disorders (See Appendix C).

## Measures

**Demographics.** A 13-item measure (See Appendix D) was administered, assessing age, gender, pregnancy status, race and ethnicity, sexual orientation, education, income, partner status (e.g., single, cohabiting, married), partner gender, and geographic area, among others.

**Obstetric Characteristics & Sexual Activity.** A 14-item measure of obstetric characteristics (See Appendix D) was administered to assess features of each participant's pregnancy. Questions included characteristics related to their index pregnancy (including the

method by which they became pregnant and whether they were having a single or multiple pregnancy), fetal gestational age, and whether participants were sexually active during their pregnancy.

**Weight Class Constructs.** Participants self-reported their weight prior to pregnancy and at the time of survey completion. Along with their current height, pre-pregnancy weight was used to calculate pre-pregnancy BMI (pre-pregnancy weight in kg/height in $m^2$; See Appendix D). Gestational weight gain was calculated as a percentage [((current weight - prepregnancy weight in lbs.)/pre-pregnancy weight in lbs.) * 100]. This information was utilized to create three variables: pre-pregnancy BMI, pregnancy BMI, and percent gestational weight gain.

**Internalized Weight Bias.** Internalized weight bias was assessed using the Weight Bias Internalization Scale (WBIS; Durso & Latner, 2008) located in Appendix D. The WBIS is an 11-item scale that assesses participants' internalization of weight stigma utilizing a 7-point Likert scale ranging from (*1*) *strongly disagree* to (*7*) *strongly agree*, with higher scores indicating greater internalized weight bias. An item example includes, "*I am less attractive than most other people because of my* weight". Greater scores on the WBIS indicate greater endorsement of weight bias internalization. The sample demographics for the measurement development study involved 164 women, 34 men, and the sample was predominantly White (75.4%), with 14.7% identifying as African American, and the remaining participants identifying as another racial ethnic identity. In a sample of 148 individuals (50% women, 79.1% White), the WBIS has demonstrated excellent internal consistency, with Cronbach's $\alpha = .94$ (Pearl & Puhl, 2014). Further, in a longitudinal study conducted by Dieterich and colleagues (2021) utilizing the WBIS among 95 pre and postpartum women who were 68% Black/African American and 23% White, the scale demonstrated high internal consistency from pre (Cronbach's $\alpha = .81$) to postpartum

(Cronbach's α = .81). Although an updated version of the WBIS has been validated by Pearl and Puhl (2014), the Weight Bias Internalization Scale-Modified, the original scale was used in this dissertation which maintained language assuming participants were overweight in some items.

**Body Dissatisfaction.** The Body Image in Pregnancy Scale (BIPS) is a 36-item measure used to assess experiences of body dissatisfaction while pregnant (Watson et al., 2017; See Appendix D). The BIPS contains seven subscales: six items related to Preoccupation with Appearance (e.g., "*I spend a lot of time thinking about my pregnancy body size*"), seven items related to Dissatisfaction with Strength (e.g., "*How happy are you with the pregnancy-related changes to your muscle tone?*"), four items measuring Dissatisfaction with Facial Features (e.g., "*How happy are you with the pregnancy-related changes to your skin tone?*"), five items of Sexual Attractiveness (e.g., "*I like and appreciate my pregnant body sexually*"), five items related to Prioritizing Appearance over Body Functions (e.g., "*I am more concerned with the function of my breasts during pregnancy than how they look*"), three items assessing Appearance-related Behavioral Avoidance (e.g., "*Have you restricted your eating in order to feel thinner during pregnancy?*"), and finally six items for Dissatisfaction with Body Parts (e.g., "*How happy are you with your ankles during pregnancy?*"). The BIPS utilizes a 5-point scale with the reference points changing based on the items. For example, for items asking about satisfaction with body parts or changes to a participant's body, the reference points ranged from (*1*) *completely dissatisfied* to (*5*) *completely satisfied*. Items assessing body image importance or ideals, sexual attractiveness, or prioritization of function/aesthetic features had endpoints of (*1*) *strongly disagree* to (*5*) *strongly agree*. Lastly, appearance-related behavioral items ranged from (*1*) *never engaged with the behavior* to (*5*) *always engaged in the behavior*.

The BIPS has demonstrated good reliability and validity in samples of pregnant women. In a 2017 study conducted among 251 pregnant women, with 97.3% German nationality, by Watson and colleagues, all BIPS subscales demonstrated good internal consistency (Cronbach's α range = .83 - .92) with the exception of the Behavioral Avoidance subscale (Cronbach's α range = .69). BIPS subscales also demonstrated good convergent validity with other measures of body image and mental health (i.e., BAQ subscales of Feeling Fat, Salience of Weight and Shape, Rosenberg Self-Esteem Scale, and Edinburgh Postnatal Depression Scale). It also demonstrated good test-retest reliability across each subscale (range of $r$ = .57 to .90). For this dissertation, a confirmatory factor analysis was conducted to determine validity of summing the seven subscales and averaging to create one total scale score. The CFA supported one factor; thus, all subscales were totaled to create a single score. Greater scores on the BIPS indicated worse body image disturbance during pregnancy.

**Sexual Functioning.** Sexual functioning was assessed using the Female Sexual Functioning Index (FSFI; Rosen et al., 2000) located in Appendix D and is a 19-item questionnaire that assesses sexual functioning within the past four weeks in six domains including desire (e.g., "*Over the past 4 weeks, how **often** did you feel sexual desire or interest?*"), arousal (e.g., "*Over the past 4 weeks, how **often** did you feel sexually aroused ("turned on") during sexual activity or intercourse?*"), lubrication (e.g., "*Over the past 4 weeks, how **difficult** was it to become lubricated ("wet") during sexual activity or intercourse?*"), orgasm (e.g., "*Over the past 4 weeks, when you had sexual stimulation or intercourse, how **often** did you reach orgasm (climax)?*"), satisfaction (e.g., "*Over the past 4 weeks, how **satisfied** have you been with the amount of emotional closeness during sexual activity between you and your*

*partner?*"), and pain (e.g., "*Over the past 4 weeks, how **often** did you experience discomfort or pain following vaginal penetration?*").

Participants are asked to evaluate their experience within each domain using the pertinent 5-point rating scales (e.g., *almost never or never* to *almost always or always*; *very low or none at all* to *very high*). The creation of this scale involved predominantly White participants, with 76.6% being Caucasian and 10.9% identifying as African American in the Female Sexual Arousal Disorder group and 76.3% identifying as White with 11.5% identifying as African American in the control group. Each of the six domains are summed and multiplied by a factor (0.6 for desire subscale, 0.3 for arousal and lubrication subscales, and 0.4 for orgasm, satisfaction, and pain subscales), so that each subscale has a range of 0 to 6 (Reed et al., 2014). The full-scale score sums each subscale and ranges from 2 to 36 with higher scores indicating greater sexual functioning. Alternatively, scores below 26.5 are considered clinically significant and suggestive of sexual dysfunction (Weigel et al., 2005). The FSFI has demonstrated good internal consistency (Cronbach's $\alpha > .82$ for all subscales) and good test-retest reliability across all six domains with 2-4 week test-retest correlations ranging from .79 to .86 (Rosen et al., 2000).

**Sexual Satisfaction.** Sexual satisfaction was assessed using the Sexual Satisfaction Scale for Women (SSS-W; Meston & Trapnell, 2005). The SSS-W is a 30-item measure of sexual distress and satisfaction across five domains including contentment (e.g., "*I feel content with how often I presently have sexual intimacy (kissing, intercourse, etc.) in my life*"), communication (e.g., "*My partner and I don't discuss sex openly*"), compatibility (e.g., "*Partner's beliefs about sex are too different from mine*"), relational concern (e.g., "*Partner may have an affair*"), and personal concern (e.g., "*My sexual difficulties make me feel sexually unfulfilled*"; see Appendix

D). The five subscales were totaled and used to assess satisfaction related to sexual intimacy and sexual relationships, with greater scores indicating better sexual satisfaction. Among a sample of 538 women who were predominantly White (i.e., 66% Caucasian, 18% Hispanic, 9% Asian, 4% African American, and 3% another racial identity), correlations between the contentment subscale and other subscales were moderate to high (.52 to .70) among the female sexual dysfunction sample and control sample combined. Among the combined sample, all subscales demonstrated good internal consistency with Cronbach's $\alpha = .80$ for all subscales except the communication subscale. Further, the contentment subscale has shown the highest correlation with overall satisfaction score in both clinical and non-clinical samples (Meston & Trapnell, 2005).

## Analysis Plan

### *Aim 1*

The first aim of this dissertation examined the extent to which pre-pregnancy BMI and gestational weight gain were related to internalized weight bias, body dissatisfaction, sexual satisfaction, and sexual functioning among pregnant women. To address hypotheses one through four, bivariate correlations will be performed to evaluate pre-pregnancy BMI and its relation to internalized weight bias, body dissatisfaction, sexual satisfaction, and sexual functioning. Additionally, for gestational weight gain, linear regressions will be conducted separately to evaluate the relation to the same four continuous variables (internalized weight bias, body dissatisfaction, sexual functioning, and sexual satisfaction), controlling for gestational weeks pregnant. Specific hypotheses are reiterated below.

**Hypothesis 1**. BMI and weight gain will be related to internalized weight bias.

**(a)** Greater pre-pregnancy BMI will be associated with more weight bias.

**(b)** Greater gestational weight gain (by percentage) will be associated with more internalized weight bias.

**Hypothesis 2**. BMI and weight gain will be related to body dissatisfaction.

**(a)** Greater pre-pregnancy BMI will be associated with more body dissatisfaction.

**(b)** Greater gestational weight gain (by percentage) will be associated with more body dissatisfaction.

**Hypothesis 3**. BMI and weight gain will be related to sexual functioning.

**(a)** Greater pre-pregnancy BMI will be associated with poorer sexual functioning.

**(b)** Greater gestational weight gain (by percentage) will be associated with poorer sexual functioning.

**Hypothesis 4**. BMI and weight gain will be related to sexual satisfaction.

**(a)** Greater pre-pregnancy BMI will be associated with less sexual satisfaction.

**(b)** Greater gestational weight gain (by percentage) will be associated with less sexual satisfaction.

***Aim 2***

The second aim of this dissertation examined internalized weight bias and body dissatisfaction as predictors of sexual functioning and sexual satisfaction. Specific analyses for hypotheses five and six are detailed below.

**Hypothesis 5.** Internalized weight bias will predict sexual health.

**(a)** Internalized weight bias will predict sexual functioning, where greater weight bias is associated with poorer sexual functioning.

**(b)** Internalized weight bias will predict sexual satisfaction, where greater weight bias is associated with lower satisfaction.

In order to examine Hypothesis 5, the relation between internalized weight bias and sexual health (sexual functioning and sexual satisfaction) was modeled using separate linear regression analyses for each outcome to determine if weight bias will be a significant predictor of sexual health.

**Hypothesis 6.** Body dissatisfaction will predict sexual health.

**(a)** Body dissatisfaction will predict sexual functioning, where greater body dissatisfaction is associated with poorer functioning.

**(b)** Body dissatisfaction will predict sexual satisfaction, where greater body dissatisfaction is associated with lower satisfaction.

To examine Hypothesis 6, the relation between the measure of body dissatisfaction and sexual health (sexual functioning and sexual satisfaction) was modeled using separate linear regression analyses for each outcome to determine if body dissatisfaction is a significant predictor of these measures of sexual health.

***Aim 3***

The third aim of this dissertation evaluated a parallel mediation model to examine the indirect effects of internalized weight bias and body dissatisfaction on the relation between weight class (pre-pregnancy BMI and gestational weight gain) and sexual health (sexual functioning and sexual satisfaction).

**Hypothesis 7.** Weight class (pre-pregnancy BMI [$X_1$] and gestational weight gain [$X_2$]) will indirectly affect sexual health (sexual functioning [$Y_1$] and sexual satisfaction [$Y_2$]) via parallel mediators, internalized weight bias ($M_1$) and body dissatisfaction ($M_2$), such that greater weight class (greater pre-pregnancy BMI and greater gestational weight gain) will lead to heightened internalized weight bias and body dissatisfaction, which in turn

leads to worsened sexual health outcomes (i.e., decreased sexual satisfaction and sexual functioning).

To conduct the parallel mediation analyses in Hypothesis 7, the bootstrap procedure recommended by Hayes (2013) was utilized. This statistical procedure was selected as opposed to a traditional or simple mediation analysis (Baron & Kenny, 1986; Preacher & Hayes, 2004, Shrout & Bolger, 2002) given the increased chance of both Type I and Type II errors (MacKinnon et al., 2002; Preacher & Hayes, 2004). Utilizing a bootstrapping approach, a large number of randomly sampled observations (i.e., bootstrap samples) was drawn from the dataset with replacement in order for the model paths for each of these bootstrap samples to be estimated (Hayes, 2013). Results from these estimated paths were then used to calculate a 95% confidence interval of the estimate. Confidence intervals that do not contain zero are considered indicative of a significant model path. Analyses within this study were conducted using *R* version 4.1.1 (Kick Things), with *lavaan* package (Rosseel, 2012), which drew 5,000 bootstrap samples given the suggested minimum of 1,000 by Edwards and Lambert (2007) in order to ensure an accurate estimate of the 95% confidence interval. Bootstrap mediation analyses produce an estimate and a confidence interval for several paths in the model, displayed below in Table 1.

**Table 1**

*Proposed mediation paths for structural equation model*

| Path Name | Description |
|---|---|
| $a_1$ | $X_1 \rightarrow M_1$ |
| $b_1$ | $M_1 \rightarrow Y_1$ |
| $a_1$ x $b_1$ | Indirect mediated path |
| $a_2$ | $X_1 \rightarrow M_2$ |
| $b_2$ | $M_2 \rightarrow Y_1$ |

| | |
|---|---|
| $a_2$ x $b_2$ | Indirect mediated path |
| $a_3$ | $X_2 \rightarrow M_1$ |
| $b_3$ | $M_1 \rightarrow Y_2$ |
| $a_3$ x $b_3$ | Indirect mediated path |
| $a_4$ | $X_2 \rightarrow M_2$ |
| $b_4$ | $M_2 \rightarrow Y_2$ |
| $a_4$ x $b_4$ | Indirect mediated path |

***Exploratory Aim 4***

The fourth aim of this dissertation was to examine racial group differences via multiple group analysis (see Figure 1 for a depiction of this proposed structural equation model) using methods proposed by Cheung and Rensvold (2002). It was intended to fit the proposed model to each racial group separately to measure structural invariance (i.e., configural invariance, weak invariance) between Black/African American women and White/European American women using *R* version 4.1.1 (Kick Things), with *lavaan* package (Rosseel, 2012). Although Hypothesis 8 remains described below, due to low *n* sizes and lack of power, this analysis could not be adequately performed. Therefore, psychometrics across racial groups were examined instead (e.g., means, standard deviations, internal consistency).

**Hypothesis 8.** Relationships between pre-pregnancy BMI, gestational weight gain, internalized weight bias, body dissatisfaction, and sexual functioning, and sexual satisfaction as constructs will differ across racial groups (Black/African American women and White/European American women).

***Exploratory Aim 5***

The fifth and final aim of this dissertation was exploratory and examined racial group (Black/African American race, White/European American race) as a moderator of the parallel mediation proposed in Hypothesis 7 (see Figure 1 for a depiction of this proposed moderated mediation model).

**Hypothesis 9.** Race will moderate the $a_1$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between pre-pregnancy BMI and internalized weight bias) such that the strength of the relationship between pre-pregnancy BMI and IWB will be stronger among White/European American women than Black/African American women.

**Hypothesis 10.** Race will moderate the $b_1$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between IWB and sexual functioning) such that the strength of the relation between IWB and sexual functioning will be stronger among White/European American women than Black/African American women.

**Hypothesis 11.** Race will moderate the $a_2$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between pre-pregnancy BMI and body dissatisfaction) such that the strength of the relation between pre-pregnancy BMI and body dissatisfaction will be stronger among White/European American women than Black/African American women.

**Hypothesis 12.** Race will moderate the $b_2$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between body dissatisfaction and sexual functioning) such that the strength of the relation between body dissatisfaction and sexual functioning will be stronger among White/European American women than Black/African American women.

**Hypothesis 13.** Race will moderate the $a_3$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between gestational weight gain and internalized weight bias) such that the strength of the relation between gestational weight gain and IWB will be stronger among White/European American women than Black/African American women.

**Hypothesis 14.** Race will moderate the $b_3$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between IWB and sexual satisfaction) such that the strength of the relation between IWB and sexual satisfaction will be stronger among White/European American women than Black/African American women.

**Hypothesis 15.** Race will moderate the $a_4$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between gestational weight gain and body dissatisfaction) such that the strength of the relation between gestational weight gain and body dissatisfaction will be stronger among White/European American women than Black/African American women.

**Hypothesis 16.** Race will moderate the $b_4$ path of the mediated relation proposed in Hypothesis 7 (i.e., the relation between body dissatisfaction and sexual satisfaction) such that the strength of the relation between body dissatisfaction and sexual satisfaction will be stronger among White/European American women than Black/African American women.

Hypotheses ten through 16 were evaluated using the procedure recommended by Preacher and colleagues (2007) and Hayes (2015) for evaluating moderated mediation. Specifically, the bootstrapping technique described under Hypothesis 7 was used to calculate an estimate and confidence interval for the indirect mediated path for pregnant women who are

Black/African American as well as women who are White/European American. Next, the presence of moderation was examined with a significance test comparing the effect size for the direct path (the $a_1$, $b_1$, $a_2$, $b_2$ , $a_3$, $b_3$, $a_4$, *or* $b_4$ path depending on the analysis) for women who are Black/African American to the effect size for women who are White/European American, where a confidence interval that does not contain zero is indicative of significant moderation of the model path.

# CHAPTER 3: RESULTS

## Demographics and Pregnancy-related Characteristics

Participants were 306 pregnant individuals (assigned female at birth and gender diverse) drawn from a Qualtrics Panel and who live in the United States (mean age $M$ = 31.4; $SD$ = 6.09; age range 18-45). Of these 306 participants, the majority identified as non-Hispanic/Latina/x ($n$ = 253; 82.7%), however 40.5% ($n$ = 124) identified as Black/African American. The sample was overwhelmingly heterosexual ($n$ = 256; 83.9%), employed ($n$ = 259; 84.6%), and almost half of the sample was married ($n$ = 148; 48.4%). Participants were diverse in educational level, income, and geographic area they resided in; however, independent samples $t$-tests demonstrated no significant differences in education, income, or employment status based on race. Further, Black pregnant women had significantly greater pre-pregnancy BMI, $M$ = 27.45, $SD$ = 7.60, compared to White pregnant women $M$ = 24.48, $SD$ = 5.57, $t$(218.134) = 3.64, $p$ < .001; $g$ = 0.45), and White women had greater gestational weight gain percentage ($M$ = 19.24%, $SD$ = 13.03%) than Black pregnant women ($M$ = 11.83%, $SD$ = 12.06%, $t$(280) = -4.90, $p$ < .001; $g$ = 0.59). Additionally, White women had greater internalized weight bias, $M$ = 3.88, $SD$ = 1.31, relative to Black pregnant women ($M$ = 3.34, $SD$ = 1.42, $t$(278) = -3.08, $p$ = .002; $g$ = 0.40) as well as greater body dissatisfaction $M$ = 2.86, $SD$ = 0.58, in comparison to Black pregnant women ($M$ = 2.68. $SD$ = 0.68, $t$(255) = -2.18, $p$ < .05; $g$ = 0.29). There were no racial differences with regard to sexual functioning or satisfaction, or in terms of meeting the cut-off criteria for sexual dysfunction. Detailed demographics for the final sample of pregnant individuals who completed all measures are summarized in Table 2.

**Table 2**

*Demographics of Pregnant Individuals*

| | ***N*** | **%** | **Black Women *n* (% total sample)** | **White Women *n* (% total sample)** |
|---|---|---|---|---|
| Ethnicity | | | | |
| Non-Hispanic/Latina/x | 253 | 82.7 | - | - |
| Hispanic/Latina/x | 53 | 17.3 | - | - |
| Race* | | | | |
| Black/African American | 124 | 40.5 | - | - |
| East Asian | 2 | <1.0 | - | - |
| Indigenous/Native American | 3 | <1.0 | - | - |
| Latina/Hispanic | 24 | 7.8 | - | - |
| Middle Eastern/North African | 1 | <1.0 | - | - |
| Southeast Asian | 2 | <1.0 | - | - |
| White/European American | 157 | 51.3 | - | - |
| Sexual Orientation | | | | |
| Asexual/Aromantic | 12 | 3.9 | 9 (2.9) | 2 (<1) |
| Bisexual/Biromantic | 27 | 8.9 | 16 (5.2) | 8 (2.6) |
| Gay/Lesbian | 6 | 2.0 | 4 (1.3) | 2 (<1) |
| Heterosexual/Straight | 256 | 83.9 | 92 (30.1) | 144 (47.1) |
| Pansexual | 3 | 1.0 | 1 (<1) | 2 (<1) |
| Other | 1 | 0.3 | 1 (<1) | 0 (0) |
| Highest Educational Level | | | | |
| Completed 8th grade | 6 | 2.0 | 3 (<1) | 2 (<1) |
| High school or GED | 66 | 21.6 | 42 (13.7) | 20 (6.5) |
| Some college | 41 | 13.4 | 22 (7.2) | 14 (4.6) |
| Associate degree | 35 | 11.4 | 19 (6.2) | 9 (2.9) |
| Bachelor’s degree or four-year | 74 | 24.2 | 23 (7.5) | 47 (15.4) |
| Master’s degree | 52 | 17.0 | 8 (2.6) | 43 (14.1) |
| Professional degree | 32 | 10.5 | 7 (2.3) | 23 (7.5) |
| Income | | | | |
| $20,000 or less | 39 | 12.7 | 28 (9.1) | 7 (2.3) |
| $20,001 to $40,000 | 50 | 16.3 | 30 (9.8) | 15 (4.9) |
| $40,001 to $60,000 | 46 | 15.0 | 22 (7.2) | 16 (5.2) |
| $60,001 to $80,000 | 45 | 14.7 | 20 (6.5) | 24 (7.8) |
| $80,001 to $100,000 | 53 | 17.3 | 15 (4.9) | 37 (12.1) |
| $100,001 or more | 73 | 23.9 | 9 (2.9) | 59 (19.3) |

| | | | | |
|---|---|---|---|---|
| Employment | | | | |
| Unemployed | 39 | 12.7 | 18 (5.9) | 16 (5.2) |
| Employed | 259 | 84.6 | 103 (33.7) | 138 (45.1) |
| Short-term disability | 5 | 1.6 | 1 (<1) | 3 (<1) |
| Long-term disability | 3 | 1.0 | 2 (<1) | 1 (<1) |
| Geographic Location | | | | |
| Rural | 52 | 17.0 | 25 (8.2) | 23 (7.5) |
| Suburban | 90 | 29.4 | 50 (16.3) | 31 (10.1) |
| Urban | 140 | 45.8 | 41 (13.4) | 91 (29.7) |
| Urban inner city | 24 | 7.8 | 8 (2.6) | 13 (4.2) |
| Partner Status | | | | |
| Single | 43 | 14.1 | 29 (9.5) | 10 (3.3) |
| Dating, long-term | 71 | 23.2 | 49 (16.0) | 16 (5.2) |
| Cohabiting, long-term | 44 | 14.4 | 15 (4.9) | 21 (6.9) |
| Married | 148 | 48.4 | 31 (10.1) | 111 (36.3) |

*Note.* *Participants were allowed to select more than one racial group identity, therefore percentages total more than 100%.

Obstetric characteristics are summarized in Table 3. Of these 306 participants, the majority of pregnant individuals were in their second trimester (*n* = 46.1; 141%) conceived via sexual intercourse (*n* = 291; 95.1%) and were having a single pregnancy (*n* = 293; 95.8%) and were not characterized as high-risk (*n* = 226; 73.9%). In terms of gravidity for participants, most were in their first (*n* = 50; 16.3%), second (*n* = 92; 30.1%), or third pregnancy (*n* = 84; 27.5%), and a notable percentage had experienced prior miscarriages (*n* = 72; 23.5%). With specific regard to Black and White pregnant women, differences were not observed by trimester, type of pregnancy, high risk nature, gravity, parity, or past history of miscarriages.

**Table 3**

*Obstetric Characteristics of Pregnant Individuals*

| | ***N*** | **%** | **Black Women *n* (% total sample)** | **White Women *n* (% total sample)** |
|---|---|---|---|---|
| Method of Conception | | | | |
| Sexual intercourse | 291 | 95.1 | 118 (38.6) | 150 (49.0) |
| Assisted reproductive technology | 15 | 4.9 | 5 (1.6) | 8 (2.6) |

| | | | | |
|---|---|---|---|---|
| Trimester | | | | |
| First | 74 | 24.2 | 42 (13.7) | 29 (9.5) |
| Second | 141 | 46.1 | 55 (18.0) | 78 (25.5) |
| Third | 91 | 29.7 | 27 (8.8) | 51 (16.7) |
| Type of Pregnancy | | | | |
| Single | 293 | 95.8 | 115 (37.6) | 154 (50.3) |
| Multiple (twins, triplets, etc.) | 13 | 4.2 | 9 (2.9) | 4 (1.3) |
| High Risk Pregnancy | | | | |
| No | 226 | 73.9 | 83 (27.1) | 123 (40.2) |
| Maybe/unsure | 49 | 16.0 | 23 (7.5) | 22 (7.2) |
| Yes | 31 | 10.1 | 18 (5.9) | 13 (4.2) |
| Gravidity (# of Prior Pregnancies) | | | | |
| 0 | 55 | 17.9 | 34 (11.1) | 17 (5.5) |
| 1 | 92 | 30.1 | 33 (10.8) | 53 (17.3) |
| 2 | 84 | 27.5 | 24 (7.8) | 53 (17.3) |
| 3 | 37 | 12.1 | 13 (4.2) | 21 (6.9) |
| 4 | 18 | 5.9 | 8 (2.6) | 6 (2.0) |
| 5 or more | 20 | 6.5 | 12 (3.9) | 8 (2.6) |
| Parity (# of Live Births) | | | | |
| 0 | 67 | 21.9 | 39 (12.7) | 20 (6.5) |
| 1 | 101 | 33.0 | 33 (10.8) | 62 (20.3) |
| 2 | 90 | 29.4 | 28 (9.1) | 52 (17.0) |
| 3 | 28 | 9.2 | 10 (3.3) | 15 (4.9) |
| 4 | 11 | 3.6 | 5 (1.6) | 6 (1.9) |
| 5 or more | 9 | 2.9 | 7 (2.3) | 2 (<1) |
| Prior Experience of Miscarriage | | | | |
| No | 225 | 73.5 | 91 (29.7) | 119 (3.9) |
| Maybe/unsure | 9 | 2.9 | 3 (<1) | 4 (1.3) |
| Yes | 72 | 23.5 | 30 (9.8) | 35 (11.4) |

**Weight- and Sexual Health-related Outcomes**

All continuous variables, including pre-pregnancy BMI, pregnancy BMI, percent of gestational weight gain (%GWG), internalized weight bias, body dissatisfaction, sexual functioning, and sexual satisfaction, were examined to assess variable distribution and issues related to skew and kurtosis see Table 4). All measures showed acceptable internal consistency

(α = .75 - .96). For all variables except for pre-pregnancy BMI, skew and kurtosis were acceptable suggesting no data transformation was needed (see Table 4). For pre-pregnancy BMI, scores were not normally distributed, instead displaying a positive skew (displayed in Table 4). However, given the nature of BMI, log and square root transformations were *not* attempted to normalize data, as a positive skew in BMI is expected for this participant sample. Further, 47.2% of the sample met criteria for sexual dysfunction (FSFI score less than or equal to 26.5).

**Table 4**

*Descriptive Statistics of Continuous Variables*

| Variable | *n* | *M* | *SD* | Min | Max | α | Skew | Kurtosis |
|---|---|---|---|---|---|---|---|---|
| Pre-pregnancy BMI | 306 | 25.7 | 6.6 | 17.5 | 54.9 | - | 1.44 | 2.19 |
| Pregnancy BMI | 306 | 29.6 | 6.7 | 18.6 | 53.2 | - | 1.15 | 1.25 |
| % Gestational Weight Gain | 306 | 16.3 | 13.4 | -10.0 | 80.0 | - | 1.11 | 2.56 |
| Internalized Weight Bias | 306 | 3.69 | 1.4 | 1.0 | 7.0 | .88 | 0.21 | -0.90 |
| Body Dissatisfaction | 280 | 2.80 | 0.6 | 1.0 | 4.2 | .75 | -0.35 | 0.19 |
| Sexual Functioning | 306 | 27.2 | 5.2 | 12.2 | 36.0 | .92 | -.05 | -.87 |
| Sexual Satisfaction | 305 | 87.9 | 21.9 | 32.0 | 120.0 | .96 | -.08 | -1.07 |

*Note.* Internalized Weight Bias = Weight Bias Internalization Scale (WBIS); Body Dissatisfaction = Body Image in Pregnancy Scale (BIPS); Sexual Functioning = Female Sexual Functioning Index (FSFI) cutoff score = 26.5; Sexual Satisfaction = Sexual Satisfaction Scale for Women (SSS-W).

**Aim 1: Relation between Weight-related Constructs and Outcome Variables**

Correlation analyses were conducted among pre-pregnancy BMI, internalized weight bias, body dissatisfaction, sexual functioning, and sexual satisfaction using Spearman's rho (*r*), displayed in Table 5. Greater pre-pregnancy BMI displayed a mildly positive correlation with internalized weight bias (*r* = .16) and body dissatisfaction (*r* = .14); however, it did not display a statistically significant relationship with sexual functioning or satisfaction. Internalized weight bias was strongly positively correlated to body dissatisfaction (*r* = .74), moderately negatively correlated to sexual dysfunction (*r* = -.33), and strongly negatively related to sexual satisfaction (*r* = -.49). Further, body dissatisfaction demonstrated a moderately negative correlation with

sexual dysfunction ($r$ = -.44) and strongly negative correlation with sexual satisfaction ($r$ = -.52). Lastly, sexual functioning and satisfaction were strongly positively correlated ($r$ = .71).

**Table 5**

*Correlational Analyses of Pre-pregnancy BMI and Weight and Sexual Health Constructs*

| | **Pre-pregnancy BMI** | **Internalized Weight Bias** | **Body Dissatisfaction** | **Sexual Functioning** | **Sexual Satisfaction** |
|---|---|---|---|---|---|
| Pre-pregnancy BMI | 1.0 | | | | |
| Internalized Weight Bias | .16** | 1.0 | | | |
| Body Dissatisfaction | .14* | .74** | 1.0 | | |
| Sexual Functioning | -.07 | -.33** | -.44** | 1.0 | |
| Sexual Satisfaction | -.09 | -.49** | -.51** | .71** | 1.0 |

**p < .05; **p < .01*

Aim 1 of this dissertation also examined whether gestational weight gain (percent) predicted poorer weight- and sexual-health related outcomes during pregnancy, while controlling for gestational weeks. Four linear regressions were conducted to test individual hypotheses that greater gestational weight gain would predict greater internalized weight bias (1b), greater body image disturbance (2b), poorer sexual functioning (3b), and lower sexual satisfaction (4b). The results of these regression analyses indicated that contrary to hypotheses, gestational weight gain did not predict any of the four weight or sexual-health related constructs (see Table 6).

**Table 6**

*Gestational Weight Gain as a Predictor of Weight and Sexual Health Outcomes*

| | Internalized Weight Bias | | | |
|---|---|---|---|---|
| Predictor | *b* | *SE(b)* | *β* | *Semi-partial* $r^2$ |
| Constant | 3.513 | .220 | | |
| Gestational Weight Gain (%) | .006 | .006 | .059 | .003 |
| $R^2$ | .004 | | | |
| F | .650 | | | |
| | Body Dissatisfaction | | | |
| Constant | 2.743 | .105 | | |
| Gestational Weight Gain (%) | .005 | .003 | .102 | .010 |
| $R^2$ | .010 | | | |

| | | | | |
|---|---|---|---|---|
| F | 1.452 | | | |
| | Sexual Functioning | | | |
| Constant | 27.043 | .839 | | |
| Gestational Weight Gain (%) | -.012 | .022 | -.032 | .001 |
| $R^2$ | .001 | | | |
| F | .221 | | | |
| | Sexual Satisfaction | | | |
| Constant | 84.782 | 3.523 | | |
| Gestational Weight Gain (%) | -.021 | .094 | -.013 | <.000 |
| $R^2$ | .004 | | | |
| F | .621 | | | |

*$p$<.05

**Aim 2: Body and Weight-related Constructs as Predictors of Sexual Health Outcomes**

The second aim of this dissertation examined whether internalized weight bias and body dissatisfaction predicted poor sexual health outcomes, specifically, sexual dysfunction and low sexual satisfaction among pregnant individuals. Four separate linear regressions were conducted, the first and second of which examined internalized weight bias predicting (1) sexual functioning and (2) sexual satisfaction. Results are displayed in Table 7 below.

**Table 7**

*Internalized Weight Bias as a Predictor of Sexual Health Outcomes*

| | **Sexual Functioning** | | | |
|---|---|---|---|---|
| | *b* | *SE(b)* | *β* | *Semi-partial* $r^2$ |
| Constant | 31.368* | 1.058 | | |
| Internalized Weight Bias | .-1.242* | .209 | -.324 | .105 |
| $R^2$ | .106 | | | |
| F | 17.781* | | | |
| | **Sexual Satisfaction** | | | |
| Constant | 112.450* | 4.127 | | |
| Internalized Weight Bias | -7.722* | .814 | -.479 | .230 |
| $R^2$ | .234 | | | |
| F | 45.727* | | | |

*$p$<.001

The results of the regression analyses indicated that internalized weight bias predicted sexual functioning and satisfaction, thus supporting hypotheses 5a and 5b. Next, two linear

regressions were conducted to determine if body dissatisfaction predicted sexual health outcomes. Results are displayed in Table 8.

**Table 8**

*Body Dissatisfaction as a Predictor of Sexual Health Outcomes*

| | **Sexual Functioning** | | | |
|---|---|---|---|---|
| | *b* | *SE(b)* | *β* | *Semi-partial* $r^2$ |
| Constant | 37.013* | 1.455 | | |
| Body Dissatisfaction | -3.547* | .447 | -.430 | .185 |
| $R^2$ | .185 | | | |
| F | 31.488* | | | |
| | **Sexual Satisfaction** | | | |
| Constant | 132.394* | 6.110 | | |
| Body Dissatisfaction | -17.041* | 1.879 | -.478 | .229 |
| $R^2$ | .232 | | | |
| F | 41.793* | | | |

*$p$<.001

Similarly to hypothesis 5, results from the linear regressions conducted supported that body dissatisfaction predicted sexual functioning and satisfaction, thus supporting hypothesis 6a and 6b.

**Aim 3: Parallel Mediation of Pregnancy, Weight, and Sexual Health Outcomes**

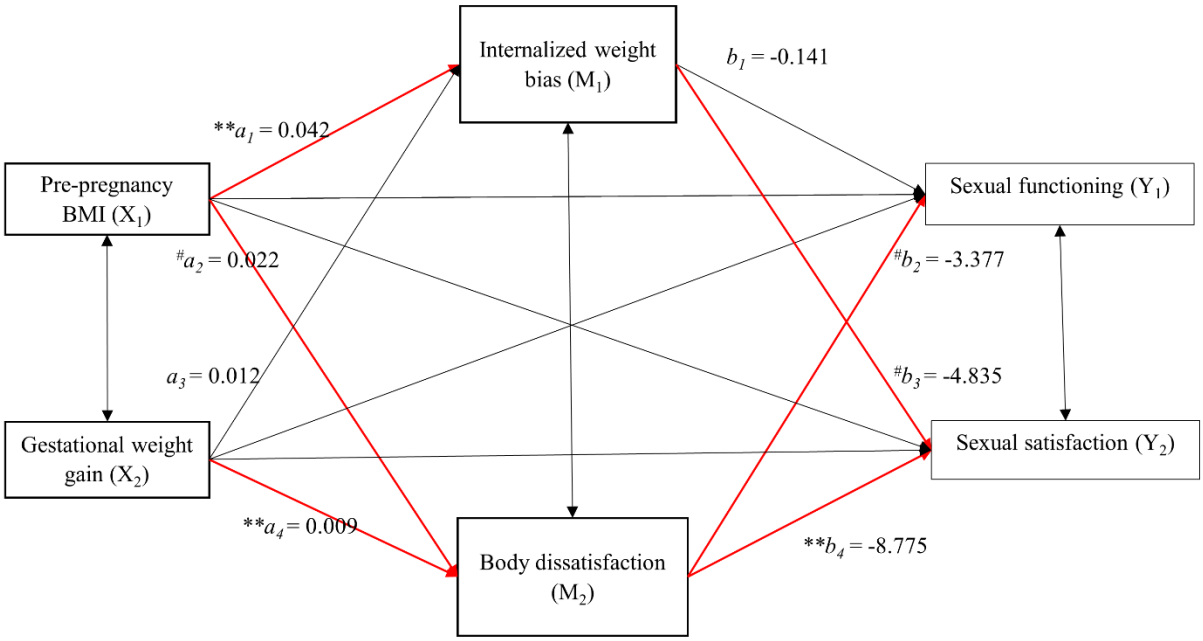
Structural equation modeling was utilized to evaluate a parallel mediation model to examine the indirect effects of internalized weight bias ($M_1$) and body dissatisfaction ($M_2$) on the relation between weight class (pre-pregnancy BMI [$X_1$] and gestational weight gain [$X_2$]) and sexual health (sexual functioning [$Y_1$] and sexual satisfaction [$Y_2$]). Gestational weeks was added as a covariate in the model. Broadly, Hypothesis 7 theorized that greater weight class would lead to worsened weight bias and body dissatisfaction, thus leading to poorer sexual health outcomes. All *a* and *b* path estimates are displayed in Figure 2. First, greater pre-pregnancy BMI was related to greater internalized weight bias ($a_1$ = .042, $p$ = .001), however internalized weight bias was not related to worse sexual functioning ($b_1$ = -.141, $p$ = .625),

therefore the indirect effect of pre-pregnancy BMI on sexual functioning through its relationship with internalized weight bias was not significant ($a_1b_1$ 95% CI = -0.034 to 0.018).

Second, pre-pregnancy BMI was indirectly related to sexual satisfaction through its relationship with internalized weight bias; participants who reported greater pre-pregnancy BMI had greater internalized weight bias ($a_1$ = .042, $p$ = .001), which in turn was related to worse sexual satisfaction ($b_3$ = -4.835, $p$ < .001), $a_1b_3$ = -0.201, 95% CI = -0.395 to -0.058. Third, greater gestational weight gain was associated with more body dissatisfaction ($a_2$ = 0.022, $p$ < .001), which was then related to worse sexual functioning ($b_2$ = -3.377, $p$ < .001), and the indirect effect of gestational weight gain and sexual dysfunction through body dissatisfaction ($a_2b_2$ = -0.073), holding all other mediators constant, was entirely below zero (-0.128 to -0.029). Fourth, greater pre-pregnancy BMI was related to greater body dissatisfaction ($a_2$ = 0.022, $p$ < .001), and body dissatisfaction was in turn related to poorer sexual satisfaction ($b_4$ = -8.775, $p$ = .009), and the indirect effect of pre-pregnancy BMI on sexual satisfaction through body dissatisfaction was significant, $a_2b_4$ = -0.190, 95% CI = -0.388 to -0.038.

**Figure 2**

*Parallel Mediation Model of Pre-pregnancy BMI and Gestational Weight Gain on Weight- and Sexual Health-related Outcomes*




*$p$ < .05, **$p$ < .01, #$p$ < .001; Significant paths are highlighted in red; All presented effects are unstandardized.

Fifth, greater gestational weight gain during pregnancy was not associated with a greater degree of internalized weight bias (a3 = .012, $p$ = .067), and internalized weight bias was not associated with worse sexual functioning ($b_1$ = -.141, $p$ = .625); therefore, the indirect effect of gestational weight gain on sexual functioning through internalized weight bias was not significant, ($a_3b_1$ = -0.002, 95% CI = -0.012 to 0.006). Sixth, greater gestational weight gain was not associated with more weight bias internalization ($a_3$ = 0.012, $p$ = .067), however internalized weight bias was related to worse sexual satisfaction ($b_3$ = -4.835, $p$ < .001). The 95% bias-corrected confidence interval indicated that the indirect effect of gestational weight gain on

sexual satisfaction through weight bias internalization was significant, $a_3b_3$ = -0.059 95% CI = -0.142 to -0.001.

Seventh, more gestational weight gain during pregnancy was associated with more body dissatisfaction during pregnancy ($a_4$ = 0.009, $p$ = .001), which was then associated with worse sexual functioning ($b_2$ = -3.377, $p$ < .001); the indirect effect of gestational weight gain on sexual functioning through body dissatisfaction as a mediator was significant, $a_4b_2$ = -0.030, 95% CI = -0.055 to -0.011. Lastly, greater gestational weight gain was associated with more body image disturbance during pregnancy ($a_4$ = 0.009, $p$ = .001), which was then in turn related to worse sexual satisfaction ($b_4$ = -8.775, $p$ = .009); the indirect effect of gestational weight gain on sexual satisfaction through body image as a mediator was significant, $a_4b_4$ = -0.079, 95% CI = -0.166 to -0.014.

**Aim 4: Measurement Invariance in Weight and Sexual Health Outcomes**

Although examining structural invariance by racial group was initially proposed in this dissertation, due to low sample size and power, this exploratory aim was unable to be performed. As the literature currently stands, construct measurement of the weight and sexual health variables used in this dissertation have been validated among predominantly White women samples. However, very recently, researchers have begun to question whether these measures adequately capture Black women's experiences of weight bias and body image disturbance, and to the author's knowledge, there have not been studies investigating how sexual functioning and satisfaction may differ among Black women in comparison to their White counterparts. Therefore, below is an exploration at item and scale level descriptives across racial groups (see Table 9). As described previously, Black pregnant women had greater mean levels of pre-pregnancy BMI and pregnancy BMI on average in comparison to White women, and yet White

pregnant women had greater mean gestational weight gain. Further, White pregnant women had worse levels of internalized weight bias and body dissatisfaction on average in comparison to Black pregnant women. Sexual functioning and sexual satisfaction did not differ between groups. Additionally, internal consistency was comparable across groups on all four outcome measures: internalized weight bias (Black = 0.89; White = 0.87), body dissatisfaction in pregnancy (Black = 0.93; White = 0.91), sexual functioning (Black = 0.93; White = 0.90), and sexual satisfaction (Black = 0.96; White = 0.96), suggesting minimal or absent differences in how these scales may have been interpreted by participants. However, skew and kurtosis offered insight into how these scales may have functioned differently across these two racial groups. Specifically, White pregnant women were more heavily positively skewed on pre-pregnancy BMI, pregnancy BMI, and percent gestational weight gain in comparison to Black women, who showed minimal skew on these measures. And yet, Black pregnant women were more negatively skewed (-0.43) in body dissatisfaction than White pregnant women (-0.24), while White pregnant women were negatively skewed in sexual health outcomes while Black pregnant women were positively skewed in sexual functioning and sexual satisfaction. Interestingly enough though, the distribution of data for Black pregnant women were much more platykurtic on sexual functioning (-1.42) and sexual satisfaction (-1.35) in comparison to White pregnant women (sexual functioning = -0.20, sexual satisfaction = -0.68), suggesting that more Black women reported events on the ends of the spectrum of responses (extreme positive or extreme negative) in comparison to White pregnant women, who were more evenly distributed. Although, overall the kurtosis can still be considered within normal range (-2 to +2).

**Table 9**

*Descriptive Statistics of Continuous Variables among Black and White Pregnant Women*

| | Black Pregnant Women | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Variable** | ***n*** | ***M*** | ***SD*** | **Min** | **Max** | **α** | **Skew** | **Kurtosis** |
| Pre-pregnancy BMI | 124 | 27.4 | 7.6 | 17.6 | 54.9 | - | 1.22 | 1.04 |
| Pregnancy BMI | 124 | 30.3 | 7.1 | 18.6 | 53.2 | - | 1.06 | 0.92 |
| % Gestational Weight Gain | 124 | 11.8 | 12.1 | -10.0 | 50.0 | - | 0.71 | 0.30 |
| Internalized Weight Bias | 124 | 3.4 | 1.4 | 1.0 | 7.0 | 0.89 | 0.56 | -0.55 |
| Body Dissatisfaction | 107 | 2.7 | 0.7 | 1.0 | 4.0 | 0.93 | -0.43 | 0.06 |
| Sexual Functioning | 124 | 27.0 | 5.8 | 17.0 | 36.0 | 0.93 | 0.11 | -1.42 |
| Sexual Satisfaction | 123 | 87.3 | 22.9 | 38.5 | 120.0 | 0.96 | 0.16 | -1.35 |
| | **White Pregnant Women** | | | | | | | |
| | ***n*** | ***M*** | ***SD*** | **Min** | **Max** | **α** | **Skew** | **Kurtosis** |
| Pre-pregnancy BMI | 158 | 24.5 | 5.6 | 17.5 | 46.9 | - | 1.46 | 2.51 |
| Pregnancy BMI | 158 | 29..0 | 6.5 | 19.4 | 51.7 | - | 1.31 | 1.79 |
| % Gestational Weight Gain | 158 | 19.2 | 13.0 | -8.3 | 80.0 | - | 1.18 | 2.73 |
| Internalized Weight Bias | 158 | 3.8 | 1.3 | 1.0 | 7.0 | 0.87 | 0.04 | -0.91 |
| Body Dissatisfaction | 150 | 2.9 | 0.6 | 1.3 | 4.1 | 0.91 | -0.24 | -0.01 |
| Sexual Functioning | 158 | 27.3 | 4.5 | 12.2 | 36.0 | 0.90 | -0.19 | -0.20 |
| Sexual Satisfaction | 158 | 88.9 | 21.0 | 32.0 | 120.0 | 0.96 | -0.33 | -0.68 |

*Note.* Internalized Weight Bias = Weight Bias Internalization Scale (WBIS); Body Dissatisfaction = Body Image in Pregnancy Scale (BIPS); Sexual Functioning = Female Sexual Functioning Index (FSFI) cutoff score = 26.5; Sexual Satisfaction = Sexual Satisfaction Scale for Women (SSS-W).

**Aim 5: Moderated Multiple Mediation of Weight and Sexual Health Outcomes**

Moderated multiple mediation was conducted on the parallel mediation model (see Figure 1), with racial group as the moderator on the $a_1$ through $a_4$, $b_1$ through $b_4$, and $cprime_1$ through $cprime_4$ paths. Specifically, estimates and confidence intervals for the indirect mediated paths for pregnant individuals who were Black and White were generated (see Table 10). Next, presence of moderation was examined with a significance test comparing the effect size for the direct path (the $a_1$, $b_1$, $a_2$, $b_2$ , $a_3$, $b_3$, $a_4$, *or* $b_4$ path depending on the analysis) for women who are Black/African American to the effect size for women who are White/European American. A confidence interval that does not contain zero is indicative of significant moderation of the model path. Ultimately, only the $a_1$ path indicated evidence of moderation, meaning that as pre-pregnancy BMI increased, internalized weight bias increased and was stronger for Black pregnant women than for White pregnant women (see Table 10).

**Table 10**

*Bias-Corrected Bootstrap Estimates for Moderated Mediation of Racial Group on Weight- and Sexual Health Outcomes*

| | **Black Pregnant Individuals (*n* = 124)** | | | **White Pregnant Individuals (*n* = 158)** | | | **Moderation** | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Estimate** | **95% CI** | | **Estimate** | **95% CI** | | **Estimate** | **95% CI** | |
| | ***B*** | **Lower** | **Upper** | ***B*** | **Lower** | **Upper** | ***B*** | **Lower** | **Upper** |
| Pre-pregnancy BMI → WBIS ($a_1$) | 0.084* | 0.052 | 0.124 | 0.026 | -0.012 | 0.062 | 0.058* | 0.009 | 0.112 |
| Pre-pregnancy BMI → BIPS ($a_2$) | 0.033* | 0.014 | 0.051 | 0.016 | -0.001 | 0.032 | 0.017 | -0.008 | 0.042 |
| %GWG → WBIS ($a_3$) | 0.015 | -0.002 | 0.032 | -0.000 | -0.023 | 0.026 | 0.015 | -0.017 | 0.044 |
| %GWG → BIPS ($a_4$) | 0.008 | -0.000 | 0.015 | 0.006 | -0.004 | 0.017 | 0.002 | -0.012 | 0.015 |
| WBIS → FSFI ($b_1$) | -0.449 | -1.305 | 0.283 | 0.242 | -0.729 | 1.139 | -0.691 | -1.819 | 0.576 |
| BIPS → FSFI ($b_2$) | -2.369* | -4.163 | -0.452 | -3.983* | -6.248 | -1.573 | 1.614 | -1.249 | 4.572 |
| WBIS → SSSW ($b_3$) | -5.842* | -9.722 | -2.209 | -3.966* | -7.992 | -0.511 | -1.876 | -7.175 | 3.713 |
| BIPS → SSSW ($b_4$) | -5.657 | -13.356 | 2.248 | -10.950 | -22.494 | 0.322 | 5.294 | -8.305 | 19.085 |
| Pre-pregnancy BMI → FSFI ($c^*prime_1$) | -0.025 | -0.169 | 0.110 | 0.015 | -0.133 | 0.165 | -0.040 | -0.253 | 0.145 |
| %GWG → FSFI ($c^*prime_2$) | -0.028 | -0.084 | 0.022 | -0.006 | -0.096 | 0.082 | -0.022 | -0.127 | 0.077 |
| Pre-pregnancy BMI → SSSW ($c^*prime_3$) | -0.082 | -0.690 | 0.543 | 0.154 | -0.329 | 0.689 | -0.236 | -0.990 | 0.537 |
| %GWG → SSSW ($c^*prime_4$) | 0.054 | -0.203 | 0.303 | 0.015 | -0.315 | 0.324 | 0.039 | -0.382 | 0.453 |

*Note.* WBIS = Weight Bias Internalization Scale; BIPS = Body Image in Pregnancy Scale; %GWG = Percent gestational weight gain; FSFI = Female Sexual Functioning Index; SSSW = Sexual Satisfaction Scale for Women

*$p < .05$

# CHAPTER 4: DISCUSSION

The purpose of this dissertation was to examine a racially diverse sample of pregnant individuals' experiences of weight bias, body image, and sexual health outcomes, including the extent to which these constructs influence each other during pregnancy. A total of 306 pregnant individuals responded and fully completed the Qualtrics survey, thus including them in the final sample. Regarding the composition of the sample, participants were 40.5% Black, 51.3% White, 7.8% Latina/Hispanic, with the remaining participants identifying with a different racial/ethnic group (e.g., Asian descent, Middle Eastern/North African, etc.). The racial diversity of this study sample is unique, particularly within the context of weight bias internalization, body image, and sexual functioning, as these constructs are historically examined predominantly among White women samples. And yet, no significant differences were found between Black and White pregnant women regarding education, income, or employment status. In evaluating Pearl and Puhl's (2018) systematic review of internalized weight bias and health, over 60% of the studies included were limited in racial and ethnic diversity, with almost 40% of studies including samples that were three-quarters White participants. Regarding body image, a metasynthesis of 17 papers on body image during pregnancy included a lack of racial and ethnic diversity as well, with 12 articles being either exclusively or majority among White participants, four articles not reporting racial/ethnic demographics, and one paper being exclusively among Taiwanese participants (Hodgkinson et al., 2014). Lastly, Woertman and van den Brink's (2012) review of body image and female sexual functioning included 57 studies, with 40 studies including majority (i.e., 54% to 99.2%) Caucasian, White, or European women, and only one study (out of 57) exclusively focused on African American women's body image and sexual health.

In line with extant literature, in this sample Black participants, relative to White participants, had higher levels of pre-pregnancy BMI (Himmelstein et al., 2017), lower levels of gestational weight gain (Headen et al., 2015; Liu et al., 2014), lower weight bias internalization (Puhl et al., 2018), and lower body dissatisfaction during pregnancy (Capodilupo, 2015), though no differences were found regarding sexual health outcomes. Although the added demographic component of pregnancy among this sample further differentiates this group of participants from extant literature, pregnancy did not affect racial group differences historically seen in weight bias internalization and body image issues.

Regarding obstetric characteristics, 24.2% of participants were in their first trimester, 46.1% of the participants were in their second trimester of pregnancy, and about one-third (29.7%) were in their third trimester. Interestingly, the second trimester is notably the most stable trimester given pregnant persons have typically moved beyond early pregnancy-related changes (e.g., morning sickness) associated with the first trimester, have yet to experience significant physical discomfort associated with the final trimester of pregnancy, and have grown in comfort and acceptance of the psycho-emotional factors of being pregnant (Galazka et al, 2015; Johnson, 2011). However, there were no significant differences in sexual functioning or satisfaction among participants based on trimester, nor in meeting criteria for sexual dysfunction by trimester within this study, which is in contrast to previous literature (Galazka et al, 2015). It is possible that screening questions and inclusion criteria may have affected the sexual health outcomes; for example, although all women initially answered in the affirmative that they were sexually active during pregnancy, the specific sexual functioning and sexual satisfaction questionnaires then asked about sexual activity in the past four weeks. Perhaps given the sample was diverse in trimester and also answered questions about sexual activity in the past 4 weeks, it

is possible that participants were thinking of their experiences across trimesters (e.g., if someone was early in their third trimester, the past four weeks could include late second trimester). Further, given that all participants had to report being sexually active to be included in the study, the sample then excluded individuals who were not sexually active, possibly because they were experiencing sexual dysfunction that caused them to no longer engage in sexual activity during pregnancy, or because women who were feeling negatively about their weight and sexual health during pregnancy avoided the study altogether.

Taken together, demographic and obstetric characteristics of this sample suggest that although Black women may weigh more on average (i.e., have a greater BMI) than White women prior to pregnancy and during pregnancy, White women were more likely to have greater gestational weight gain than Black women, and have significantly greater levels of internalized weight bias and body dissatisfaction while pregnant. This is in line with prior literature, where White pregnant women are prone to gaining more weight during pregnancy in comparison to Black women. This trend appears to be related to Black women having greater BMI on average in comparison to White women, with studies demonstrating that with a lower BMI, pregnant individuals have a greater range of weight that they can gain, whereas women with greater BMIs have a smaller range of weight to gain, leading to a lower total percent of gestational weight gain among Black women compared to White women (Headen et al., 2015; Liu et al., 2014). Therefore, it is quite possible even when starting out heavier in weight when becoming pregnant, a psychological upside of experiencing less drastic weight gain during pregnancy than points to lower levels of body dissatisfaction (greater body appreciation) and lower internalized weight bias among Black pregnant women.

**BMI and Gestational Weight Gain as Predictors of Bias, Dissatisfaction, and Sexual Health**

The first aim of this dissertation was to examine how pre-pregnancy BMI and percent gestational weight gain were associated with levels of internalized weight bias and body dissatisfaction, as well as sexual functioning and satisfaction among a racially diverse sample of mostly Black and White pregnant women. Results from these analyses indicated that pre-pregnancy BMI was mildly positively related to internalized weight bias and body dissatisfaction, but not with sexual health outcomes. As predicted, the four main outcomes were moderately and strongly related to each other, further supporting that greater weight bias internalization and body dissatisfaction are negatively associated with sexual functioning and satisfaction.

Interestingly, percent gestational weight gain was not associated with any of the four health outcomes in simple linear regression models. This is particularly odd given the range of weight gain, with some participants losing up to 10% of their initial body weight, and others gaining 80% of their body weight (e.g., pre-pregnancy weight of 100 pounds, pregnancy weight of 180 pounds), given that variability can play a role in regression outcomes. This is in contrast to findings by Nagpal and colleagues (2022), who found that in a sample of 336 pregnant women, those who had gained excessive gestational weight gain had greater scores of internalized weight bias, suggesting that gaining more than the recommended weight by IOM's guidelines, or gaining more weight than an individual anticipated, causes a pregnant person to engage in greater negative values and judgments towards themselves. This is a notable finding from the Nagpal (2022) study given the strong association between internalized weight bias and negative health outcomes (e.g., perinatal mood disorders, poor breastfeeding outcomes, etc.),

however this finding was not reflected in the current sample which may be due to a non-linear relationship between gestational weight gain across trimesters and weight bias.

With regard to body dissatisfaction, a study by Hill and colleagues (2023) that used the Body Image in Pregnancy Scale among 182 women who were at least 12 weeks along in gestation found no significant differences in BIPS scores based on those who *actually* met criteria for excessive gestational weight gain versus those who did not. Lastly, the author is unaware of any studies evaluating gestational weight gain and sexual dysfunction and satisfaction specifically, though given the connection between overweight and obesity with sexual functioning, one might hypothesize that excessive weight gain may be associated with poorer functioning, which was not supported in this specific analysis. Despite these four health outcomes not being associated with gestational weight gain in Aim 1, later discussion of how these results panned out in the larger mediation model offered a more nuanced explanation for how these biopsychosocial outcomes relate to one another.

**Weight Bias and Body Dissatisfaction as Predictors of Sexual Health**

The second aim of this dissertation examined whether greater degrees of internalized weight bias and body dissatisfaction in a sample of pregnant women predicted worse sexual functioning and satisfaction. Results from these analyses indicated that greater endorsement of both internalized weight bias and body dissatisfaction predicted poorer sexual functioning and lower sexual satisfaction. Body dissatisfaction and internalized weight bias are often studied together, though are viewed as distinct constructs, with body dissatisfaction involving a person's negative thoughts and emotions about their body, and internalized weight stigma being the negative attitudes one holds towards themselves, plus social devaluation of themselves due to societal pressures (Saunders et al., 2022). They have both been extensively studied and known to

be associated with negative health outcomes such as poorer psychological well-being and disordered eating behaviors (Saunders et al., 2022). And yet, with regard to sexual health, extant literature has historically studied the relation between body image dissatisfaction and sexual dysfunction and satisfaction, and the author is unaware of any specific studies evaluating the relationship between internalized weight stigma and these sexual health outcomes. Instead, a strong base of literature has focused on the ties between obesity and sexual function, neglecting to review how internalized weight stigma may play a role with sexual health (Esfahani & Pal, 2018; Kolotkin et al., 2012; Sarwer et al., 2018).

Moreover, even less is known about how these four constructs (i.e., internalized weight bias, body dissatisfaction, sexual functioning, and sexual satisfaction) operate in pregnant samples. Studies largely support that greater levels of body dissatisfaction are associated with poorer sexual functioning and satisfaction in non-pregnant samples (Woertman & Van den Brink, 2012), with negative cognitions and body evaluations interfering with the female sexual response, leading to sexual avoidance, sexual distress, poorer sexual self-efficacy (Dunkley & Brotto, 2021) and overall lower scores on all domains of the Female Sexual Functioning Index (Quinn-Nilas et al., 2016). In pregnant samples, body dissatisfaction and sexual dysfunction are also found to be related, which this dissertation's results also support, however, the relationship can be further mediated by level of cognitive distraction, or by level of embracing pregnancy status (Pascoal et al., 2019). Further, the fact that this study supports an association between internalized weight bias and sexual functioning and satisfaction is novel and is important because this relationship has not been studied previously and supports the unique contribution of self-directed weight bias and negative judgments related to weight to sexual distress and dysfunction

during pregnancy. Next, a more nuanced discussion of how these four weight- and sexual health outcomes relate to BMI and gestational weight gain is provided.

## Structural Equation Modeling of Weight and Sexual Health Outcomes

The latter aims of this dissertation included evaluation of a parallel mediation model involving all six constructs (pre-pregnancy BMI, percent gestational weight gain, internalized weight bias, body image dissatisfaction, sexual functioning, and sexual satisfaction), including two exploratory aims evaluating the influence of participants' racial group on their weight and sexual health outcomes during pregnancy. Aim 3 specifically found several relationships within the model demonstrating association of weight (i.e., weight class, weight gain, weight bias, etc.) on sexual health outcomes during pregnancy. Although the cross-sectional nature of this study may call into question the directionality of these results (e.g., does gestational weight gain lead to worse body image, or does poor body image lead to more gestational weight gain?), it is most likely that BMI prior pregnancy impacts perceptions of internalized weight bias and body image more so than gestational weight gain, the latter of which is likely viewed as natural and yet some may fear that gestational weight gain may not be a temporary state of being. With that said, further discussion of how these parallel mediators functioned in the structural equation model is warranted.

### *Mediation of the Relationship between Pre-pregnancy BMI and Sexual Health Outcomes*

For example, results indicated that self-reported BMI *prior* to pregnancy plays a role in sexual functioning and satisfaction *during* pregnancy (at time of survey), and that this relationship is partially explained by perceived level of internalized weight bias and body image satisfaction. In particular, greater BMI prior to pregnancy was associated with greater internalized weight bias while participants were pregnant, and this was in turn related to lower

sexual satisfaction while pregnant. Additionally, the same trend was found with body dissatisfaction, in that the heavier an individual weighed before pregnancy was related to worse body image during pregnancy, and thus greater sexual dysfunction *and* lower sexual satisfaction. Overall, correlational and regression studies have supported the relationship between greater weight and poorer sexual functioning and satisfaction (Rowland et al., 2017; Sarwer et al., 2018). In this study, the novel contribution of internalized weight bias mediating the relationship between pre-pregnancy BMI and sexual satisfaction speaks to the powerful nature of negative self-evaluations when it comes to how an individual perceives their weight. Weight bias internalization goes beyond body dissatisfaction, as it is rooted in societal stigma of judgments of people with obesity and can go so far as to be tied to self-worth. With regard to body dissatisfaction as a mediator, results showing that this construct mediates the relation between pre-pregnancy BMI and sexual functioning and satisfaction provides further evidence and support similar to extant research.

### *Mediation of the Relationship between Gestational Weight Gain and Sexual Health Outcomes*

Further, greater weight gained *during* pregnancy predicted women's sexual functioning and sexual satisfaction via body dissatisfaction, however, internalized weight bias only mediated the relationship between gestational weight gain and sexual *satisfaction*, similar to how internalized weight bias only mediated the relationship between pre-pregnancy BMI and sexual satisfaction too. Hill and colleagues (2023) similarly explored the relationship between gestational weight gain and body image during pregnancy. In their study, gestational weight gain was coded as a percentage, then dichotomized into those who had gained excessive weight versus those who had gained the recommended amount of weight according to the Institute of Medicine Guidelines. Their results found that greater *perceived* gestational weight gain was

associated with greater BIPS scores (i.e., worse body image) in comparison to those who perceived they had not gained excessive weight suggesting that perceptions of weight gain rather than actual weight (which was also assessed in this study) gain may be more strongly associated with body image. Both this dissertation's findings paired with the findings from Hill and colleagues (2023) suggest that how individuals conceptualize their weight gain during pregnancy can strongly influence their body image perception, especially if their views are negative.

Moreover, another novel contribution of this dissertation is the finding of weight bias internalization mediating the relationship between gestational weight gain and sexual satisfaction. To the author's knowledge this relationship has not been studied before, however, this finding is expected given the strong association between body image dissatisfaction and internalized weight bias, as well as prior studies' support for negative cognitions (broadly) causing sexual distress (Dunkley & Brotto, 2021). Altogether, it is quite possible that other psycho-emotional variables are at play here and mediating these relationships, given that partner status, overall relationship satisfaction, family structure, and mental health of either partner can interfere and affect weight, body image, and sexual health during pregnancy.

### *Racial Group Differences during Pregnancy*

One of the more novel aspects of this dissertation involved the racial diversity of the sample, in particular the almost even split of sample demographics involving Black and White pregnant individuals. Overall, obesity research frequently shares the statistics of how Black individuals, and especially Black women, are at increased risk for overweight and obesity in comparison to their White counterparts (Himmelstein et al., 2017). Further, within body image and weight stigma research, these outcomes are very rarely explored among Black women, and when they are, the question still remains of whether these constructs are adequately capturing

Black women's experiences, given that the commonly used measures are normed to White, heterosexual women (Durso & Latner, 2008; Meston & Trapnell, 2005; Rosen et al., 2000; Watson et al., 2017). Therefore, this study aimed to recruit a large sample of Black pregnant women to examine racial group differences through structural invariance and moderation by race. Although the sample obtained was unable to ethically permit the study of invariance testing among the tested model in this dissertation, psychometric differences were conducted followed by moderation by race on all paths of the parallel mediation model. As described earlier, Black pregnant women reported greater pre-pregnancy BMI, pregnancy, BMI, and yet lower gestational weight gain, internalized weight bias, and body dissatisfaction in comparison to White pregnant women. Sexual functioning and sexual satisfaction did not differ across groups. Interestingly, internal consistency across scales demonstrated no differences, suggesting reliability to not be an issue across both racial groups, and indeed be strong, with alphas greater than .85 across the four outcome measures. However, skew and kurtosis did differ interestingly across groups, suggesting that although both groups had similar means on sexual functioning and sexual satisfaction, Black pregnant women were more normally distributed than White pregnant women, who had a greater number of larger values. And yet, Black pregnant women tended to have more extreme values (low or high items) on internalized weight bias and sexual health outcome measures in comparison White pregnant women who were more leptokurtic.

Tests of moderation only supported differences in strength of the relationship between pre-pregnancy BMI and internalized weight bias by race, with the relationship being stronger among Black women, which is opposite to what was hypothesized. Why none of the other model paths demonstrated moderation by racial group is unclear but could be related to how race was used in this study, and many others, as a proxy for social determinants of health (education,

income, psychosocial factors such as racial discrimination, etc.) A crude answer could be due to low sample size given breadth of the model, or potentially could indirectly support that some of these measures do not necessarily capture moderation effects by racial group. Given the rudimentary nature of measurement construction, and keeping in mind that reliability analyses were equal across groups in this study, there is still much more to learn about validity of these measures, and if the items themselves are relatable to Black pregnant women specifically. Altogether, more work is sorely needed in better representing Black pregnant women's experiences in these areas.

**Limitations**

Limitations of this study should be noted. First, one of the major limitations of this study was the cross-sectional nature of evaluating pregnant individuals across all three trimesters. Although weeks gestation was controlled for within analyses, it is possible that evaluating each group of pregnant participants by trimester would yield different results than found in the current study. For example, perhaps participants in their final trimester would have reported greater weight bias and body dissatisfaction as it relates to gestational weight gain, as opposed to those in their first trimester. Additionally, some women reported their weeks gestation which did not match up with the accurate trimester, therefore, the researcher chose to control for weeks gestation. It is possible that those earlier in pregnancy had greater sexual functioning and satisfaction, in comparison to those late in pregnancy. Altogether, the research among pregnant women tends to be mixed, with some studies showing a gradual decline in sexual functioning and satisfaction across trimesters (Serati et al., 2010), and other research showing that the first and third trimesters tend to cause the poorest outcomes in sexual functioning and satisfaction (Galazka et al, 2015; Johnson, 2011). Levels of body dissatisfaction also shift over time during

pregnancy, making a cross-sectional nature difficult to determine outcomes. Indeed, some people have poorer body image appreciation early in pregnancy but not later in pregnancy, as their appreciation grows the more, they fit the stereotypical body type of an expectant mother (Skouteris et al., 2005). Altogether, these trimester measurements also neglect to account for self-report; it is possible that participants perceptions of pre-pregnancy weight, current weight, and then the calculated gestational weight gain could be skewed based on what participants think others want them to report, rather than objective data given the self-report nature of the study. Second, considering the minimal quantitative research that has been conducted among and centered on Black women, and specifically Black pregnant women's experiences, a second significant limitation of this study is the lack of qualitative component evaluating participants' weight, body image, and sexual health related outcomes. Qualitative research, including focus group research, can be a crucial first step in measurement construction (Dilshad & Latif, 2013; Kitzsinger, 1995). It can also serve as a supplement such as in mixed-methods research, where asking open-ended questions that further explore the study constructs can add valuable insight into participants' understanding, interpretation, and personal experiences. Within the context of this dissertation, a qualitative component would have benefited the study by further centering Black pregnant women's experiences of weight and body image, especially given that they appeared to have stronger body image appreciation and lower weight bias internalization than is traditionally found in research among White pregnant women. It would also have been fruitful to learn how these experiences may have influenced their conceptualization of their sexual functioning and satisfaction while pregnant, to further understand how to address these issues from a positive health approach.

Third, although a sizable sample was obtained of Black and White pregnant individuals to conduct structural equation modeling, the sample was not large enough to test for measurement invariance across the two racial groups, a key step to determining how these constructs function together in the model and if any differences exist among Black and White pregnant individuals. Considering the dearth of research conducted among Black women, and Black pregnant women specifically, there is a major question of whether these weight and sexual health measures adequately capture Black women's experiences. For example, researchers need look no further than Lowy and colleagues (2021) article detailing the past two decades of body image and thin-ideal internalization research among Black girls and women. This review details the history of marginalization of Black bodies, oppressive research methods conducted primarily by White researchers, and the intersection of gender, racism, colorism, and body image. Their article concludes that most measures of body image and weight ideals center White and Eurocentric values, neglecting to fill the research gaps by applying culturally sensitive methods.

Fourth, this was a national sample recruited through a Qualtrics panel and demographically was more educated, with greater income level, and predominantly living in suburban or urban areas than what would be nationally representative. The sample was also largely heterosexual and married, though about 16% did identify as a sexual minority, which is far greater than the national average of 5% of women identifying as lesbian, gay, bisexual, queer or another non-heterosexual sexual identity (The Williams Institute UCLA, 2019). Therefore, how generalizable the current findings are to pregnant individuals nationally in the United States, and to Black and White women overall is something to consider. Lastly, this study chose to assess BMI and gestational weight gain as a continuous variable, rather than categorically (e.g., normal, overweight, obese, etc.; normative weight gain, excessive weight gain). It is possible that

assessing weight categorically may have yielded different results in terms of effects of body image, levels of weight bias, and sexual dysfunction or satisfaction. For example, some research has shown that those that gain excessive weight during pregnancy are at greater risk for body image disturbance and weight bias than those who gain the normative amount for their weight category (Hill et al., 2023). As such, it would be interesting in the future to explore these variables categorically in the future.

**Future Directions and Clinical Implications**

Bearing these limitations in mind, it would be critical for future studies to use a longitudinal design, as circumstances during pregnancy are transient, particularly across trimesters. It would be worthwhile to later explore this specific sample by trimester and to tease out by racial group, to see how Black pregnant women may differ in their experiences across trimester, and separately (not in comparison) from how White pregnant women may differ in their experiences of pregnancy by trimester. Using a longitudinal design also builds room for assessing other aspects of pregnancy and health outcomes, such as assessment of and treatment for perinatal mood disorders, such as in the "fourth trimester" or postpartum phase, as well as diet and exercise intervention, or building in mindfulness and self-care. Longitudinal research throughout pregnancy would also provide opportunities for intervening on other psychosocial stressors that may affect weight gain, weight stigma experiences, and sexual health outcomes, such as financial distress or job loss, partner distress or experiences of intimate partner violence, family distress such as loss of a loved one or adjustment to a growing family, and other life changes. Assessing individuals across pregnancy would be particularly beneficial for training healthcare providers on how to provide culturally-tailored and non-stigmatizing care too, as it provides the opportunity to build relationships with patients across time, understand patients'

healthcare and psychosocial needs, and implement skills learned regarding reducing stigma in healthcare settings repeatedly.

Second, a need for more work focused on the unique experiences of weight bias and body image among Black pregnant women, and how these issues may relate to their sexual functioning and satisfaction during pregnancy is sorely needed. Future empirical work should center Black pregnant women's experiences solely, instead of in a comparison group setting where their experiences are adjacent to White women's experiences. It is very possible that although Black women tend to have lower weight bias and body image difficulties than White women, that is because of how measures are currently constructed and inadequately addressing Black women's experiences. Indeed, although this study was able to speak to internal consistency as a reliability factor, validity was unable to be explored. Naturally, a future direction would involve adequate measurement construction tailored to Black pregnant women's experiences. Adequate measurement construction leads to equitable assessment of health outcomes, and with notable racial disparities existing in the US related to weight and stigma, it would be beneficial for future clinical assessments to be culturally-tailored to Black women's weight and health. For example, implementation of screening tools assessing weight bias and body image satisfaction that are culturally-tailored and normed for Black women may be used clinically and intervened upon during pregnancy, especially given that weight bias and poor body image can lead to greater gestational weight gain and negative health outcomes. Further, although some women notice a normative decline in sexual functioning and satisfaction during pregnancy secondary to their developing identity as a mother or parent, sexual health should still be treated as a priority within a whole-health model. It would be helpful to have screening tools that are normed for pregnant persons, such as modifying the cutoff score for sexual dysfunction

in the FSFI for pregnancy or developing new measures to assess sexual functioning and satisfaction specifically for pregnancy.

Third, it would be worthwhile to add a qualitative component to this type of study, in order to better assess Black pregnant women's relationships with their body image, conceptualization of weight bias within their culture and community, and how they would characterize their sexual functioning and satisfaction prior to and during pregnancy. It would also be worthwhile to further understand how Black women view pregnancy as a whole, and the degree to which weight-, body-, and sexual-health related outcomes are important to them throughout pregnancy, particularly from a strengths-based perspective of what needs are or are not being met while pregnant.

**Conclusion**

This is the first study to examine weight- and sexual-health related outcomes among a racially diverse sample of pregnant women. This sample was composed of almost 50% Black pregnant women, and almost one-fifth of the sample identified as a sexual minority person, speaking to a shift in research conducted among primarily White, heterosexual persons. Overall, both pre-pregnancy BMI and gestational weight gain predicted sexual health outcomes, and these relationships were mediated by internalized weight bias and body image satisfaction. These results suggest that the greater a person weighs prior to pregnancy, and the more weight they gain during pregnancy, is indicative of poorer sexual functioning and sexual satisfaction. Specifically, body image in particular plays a critical role here, where greater weight is associated with worse body image satisfaction, and in turn associated with poorer sexual functioning and satisfaction. Although a key limitation of this study is the cross-sectional nature, an important strength is the racial diversity of this sample, as Black women's experiences with

weight and sexual health during pregnancy are severely limited in the literature. Ideally further studies would aim to construct methodology with better equity and inclusion among this population. Altogether, future work should aim to prioritize and center Black women's experiences with weight, stigma, and sexual health, through culturally-sensitive recruitment strategies, study methodologies, and with an ultimate goal of strengthening our measurement and assessment in order to adequately capture Black pregnant women's experiences and better serve their healthcare needs.

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# APPENDIX A: IRB APPROVAL

**EAST CAROLINA UNIVERSITY**
**University & Medical Center Institutional Review Board**
4N-64 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
**rede.ecu.edu/umcirb/**

## Notification of Exempt Certification

From: Social/Behavioral IRB
To: Kayla Sall
CC: Robert Carels
Date: 5/23/2022
Re: UMCIRB 22-000145
Weight Bias and Health Outcomes among Pregnant Women

I am pleased to inform you that your research submission has been certified as exempt on 5/23/2022. This study is eligible for Exempt Certification under category # 2a.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

| Document | Description |
|---|---|
| Email advertisement for ECU(0.02) | Recruitment Documents/Scripts |
| Measures Packet v4(0.04) | Surveys and Questionnaires |
| Sall Dissertation Proposal(0.02) | Study Protocol or Grant Application |
| Social Media Advertisement 1(0.02) | Recruitment Documents/Scripts |
| SROC confirmation email from Kyle Chapman(0.01) | Additional Items |
| Weight and Health during Pregnancy Consent v2(0.03) | Consent Forms |

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

## APPENDIX B: CONSENT DOCUMENT

*East Carolina University*

### Informed Consent to Participate in Research

Information to consider before taking part in research that has no more than minimal risk.

Title of Research Study: "*Experiences of Weight and Health during Pregnancy*"

Principal Investigator: Kayla Sall, MA (Person in Charge of this Study)
Co-Investigator: Robert Carels, Ph.D, Rhonda Byrd, MSW
Institution, Department or Division: Department of Psychology
Address: 123 Rawl, East Carolina University, Greenville, North Carolina 27858
Telephone #: 252-737-5070
Study Coordinator: Kayla Sall, MA

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Researchers at East Carolina University (ECU) study issues related to society, health problems, environmental problems, behavior problems and the human condition. To do this, we need the help of volunteers who are willing to take part in research.

**Why am I being invited to take part in this research?**
You are being invited to participate in a research study titled "Experiences of Weight and Health during Pregnancy" being conducted by Kayla Sall, MA, a doctoral candidate in Clinical Health Psychology at East Carolina University in the Psychology department. The goal is to survey about 500 individuals in/at East Carolina University and from social media. It is hoped that this information will assist us to better understand how weight and stigma can affect pregnancy and experiences with healthcare providers.

**Are there reasons I should not take part in this research?**
I understand I should not volunteer for this study if I am under 18 years of age and am not currently pregnant.

**What other choices do I have if I do not take part in this research?**
You can choose not to participate. Your information and responses will be kept confidential, and no data will be released or used with your identification attached. Your participation in the research is **voluntary**. You may choose not to answer any or all questions, and you may stop at any time.

**Where is the research going to take place and how long will it last?**
The research will be conducted online. You will need to go to a quiet place to focus while completing the questionnaire. The survey will take approximately *20-30* minutes to complete

**What might I experience if I take part in the research?**
We don't know of any risks (the chance of harm) associated with this research. Any risks that may occur with this research are no more than what you would experience in everyday life. There may not be any personal benefit to you by participating in this study, but we hope that you find it interesting. In addition, the information gained by doing this research may help others in the future.

**Will I be paid for taking part in this research?**
You will receive payment through Qualtrics upon completion of the survey to compensate you for your time.

**Will it cost me to take part in this research?**
It will not cost you any money to be part of the research.

**How will you keep the information you collect about me secure?**
Coded or identified data will never be released to anyone outside of the study staff or IRB for the purposes of an audit. Your responses will be kept confidential, and no data will be released or used with your identification attached.

**What if I decide I don't want to continue in this research?**
You can stop at any time after it has already started. There will be no consequences if you stop, and you will not be criticized. You will not lose any benefits that you normally receive.

**Who should I contact if I have questions?**
The people conducting this study will be able to answer any questions concerning this research, now or in the future. You may contact the Principal Investigator (Monday-Friday, between 9am-5pm) Kayla Sall, MA at (252) 737-5070 for any research related questions or the University & Medical Center Institutional Review Board (UMCIRB) at 252-744-2914 for questions about your rights as a research participant.

**I have decided I want to take part in this research. What should I do now?**
The person obtaining informed consent will ask you to read the following and if you agree, select 'I AGREE' below:

- I have read (or had read to me) all of the above information.
- I have had an opportunity to ask questions about things in this research I did not understand and have received satisfactory answers.
- I know that I can stop taking part in this study at any time.
- By being provided with this informed consent form, I am not giving up any of my rights.

# APPENDIX C: DEBRIEF DOCUMENT AND RESOURCES

## National Resource List

Thank you for your participation in this research. If you are wanting to learn more about the topics covered in this study or are considering seeking help, the resources listed below are available to you for free or low-cost.

Postpartum Support International offers resources to new parents who may be suffering from mood-related concerns, including depressive symptoms.
**https://www.postpartum.net/**

National Child and Maternal Health Education offers resources and information about pregnancy and mental health.
**https://www.nichd.nih.gov/ncmhep/initiatives/moms-mental-health-matters/find-help**

Postpartum Support International offers resources and information related to pregnancy loss.
**https://www.postpartum.net/get-help/loss-grief-in-pregnancy-postpartum/**

The National Alliance on Mental Health offers both web and phone support for mental health help or information.
**https://www.nami.org/help**
The NAMI HelpLine can be reached Monday through Friday, 10 a.m. – 10 p.m., ET at 1(800)950-NAMI (6264) or **info@nami.org**

Faculty Sponsor Contact Information:
Rob Carels, Ph.D., ABPP
Department of Psychology, East Carolina University
Email: CARELSR14@ecu.edu
Telephone #: (252) 737-5070

## APPENDIX D: MEASURES

***Demographic Questions***

**We would like to know a little bit more about you. Please answer these questions to the best of your ability.**

1. Please use the slider to indicate your age in years. .
___ Age in years
**Note.* Exclusion criterion: Participants will exit the survey if under the age of 18 or over the age of 45.

2. What is your gender?
___ Cisgender Woman
___ Cisgender Man
___ Non-binary/third gender/gender diverse
___ Transgender Woman
___ Transgender Man
___ Other _____

3. What sex were you assigned at birth (what is written on your original birth certificate)?
___ Female
___ Intersex
___ Male
* *Note.* Exclusion criterion: Participants will exit the survey if they select male as their sex assigned at birth.

4. Are you currently pregnant?
___ No
___ Yes
* *Note.* Exclusion criterion: Participants will exit the survey if they select 'no' as their response.

5. Please indicate your current partner status.
___ Single
___ Dating, long-term relationship with one partner
___ Dating, relationship with more than one partner
___ Cohabiting, long-term relationship with one partner
___ Cohabiting, relationship with more than one partner
___ Married

6. Please describe your ethnicity.
___ Hispanic or Latina/o/x
___ Non-Hispanic or Latina/o/x

7. Please tell us how you would describe your racial/ethnic identity (check all that apply).
___ Black (African, Afro-Caribbean, African-American, etc.)

___ East Asian (Chinese, Korean, Japanese, Taiwanese)
___ Indigenous (e.g., Native American, First Nations)
___ Hispanic or Latina/o/x
___ Middle Eastern (e.g., Arab, Persian, Afghan, Egyptian, Iranian, etc.)
___ South Asian (East Indian, Pakistani, Sri Lankan)
___ Southeast Asian (Filipino, Vietnamese, Cambodian, Thai, etc.)
___ Native Hawaiian or Pacific Islander
___ White or European American
___ Another race/ethnicity - please specify: _____

8. Please describe your sexual orientation.
___ Asexual/Aromantic
___ Bisexual/Biromantic
___ Gay
___ Heterosexual/straight
___ Lesbian
___ Pansexual
___ Queer
___ Another sexual orientation - please specify _____

9. Please describe the gender of your current romantic partner.
___ Cisgender Woman
___ Cisgender Man
___ Non-binary/third gender/gender diverse
___ Transgender Woman
___ Transgender Man

10. Please provide your highest level of education.
___ Completed 8$^{th}$ grade education
___ Completed high school degree or GED equivalent
___ Some college
___ Associate degree (two years of college)
___ Four-year degree or equivalent (bachelor's)
___ Graduate degree (master's level)
___ Professional degree (doctoral level PhD, JD, MD, etc.)

11. What is your estimated annual income?
___ $20,000 or less
___ $20,001 to $40,000
___ $40,001 to $60,000
___ $60,001 to $80,000
___ $80,001 to $100.000
___ $100,001 or more

12. How would you describe your current employment status?

___ Unemployed
___ Employed
___ Short-term disability
___ Long-term disability

13. What type of geographic area do you currently live in?
___ Rural
___ Suburban
___ Urban
___ Urban inner city

***Obstetric Characteristics & Sexual Activity***

1. By which conception method did you become pregnant?
___ Sexual intercourse with partner
___ Assisted reproductive technology (e.g., in vitro fertilization, gamete intrafallopian transfer, zygote intrafallopian transfer)
___ Surrogacy/Gestational Carrier

2. What is your current trimester for your pregnancy?
___ First trimester (conception to 13 weeks)
___ Second trimester (14 to 26 weeks)
___ Third trimester (27 to 40 weeks)

3. By which of the following means has your pregnancy been confirmed?
___ Home pregnancy test
___ Pregnancy test performed by a medical professional
___ Ultrasound
___ 2 or more missed menstrual cycles/periods with no test

4. How many gestational weeks along are you in your current pregnancy? (please move the slider)
___ Pregnancy in weeks
**Note.* Weeks will be listed from 0 to 40+.

5. What type of pregnancy are you having?
___ Single pregnancy
___ Multiple pregnancy (twins, triplets, etc.)

6. At what type of clinic are you receiving prenatal care?
___ I'm not receiving prenatal care with a clinic
___ Family Medicine Practice
___ OB/GYN Practice
___ Planned Parenthood
___ Other, please write in _____

7. Have your healthcare providers characterized this pregnancy as high-risk?
___ No
___ Maybe/Unsure
___ Yes, please explain _____

8. Please select which chronic health conditions, if any, you current have:
___ Arthritis

___ Asthma
___ Cancer
___ Chronic Obstructive Pulmonary Disease (COPD)
___ Crohn's Disease, Ulcerative Colitis, or other Inflammatory Bowel Disease or Syndrome
___ Diabetes (please indicate Type I or Type II) _____
___ Heart Disease (Cardiovascular Disease; CVD)
___ Hyperlipidemia
___ Hypertension
___ Mental Health Condition (e.g., depression, anxiety, PTSD, please write in)
_____
___ Obesity
___ Osteoporosis
___ Polycystic Ovary Syndrome (PCOS)
___ Sickle Cell
___ Other, please write in _____

9. Have you been sexually active during your pregnancy? (Sexual activities include but are not limited to kissing, sexual touching, oral, vaginal, or anal sex).
___ No
___ Yes
**Note.* Participants who are not sexually active during pregnancy will exit the survey.

10. How many previous pregnancies have you had?
_____

11. How many of those pregnancies resulted in a live birth? (How many living children do you currently have?)
_____

12. Have you previously experienced pregnancy loss (i.e., miscarriage)?
___ No
___ Maybe/Unsure
___ Yes, please write how many times: _____

13. What is your estimated due date? Please enter the date using month/day/year format (mm/dd/yy).
_____

14. What was the end date of your last menstrual cycle/period? Please enter the date using month/day/year format (mm/dd/yy).
_____

***Weight Bias Internalization Scale***

| | Strongly Disagree | Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 1. As an overweight person, I feel that I am just as competent as anyone. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I am less attractive than most other people because of my weight. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. I feel anxious about being overweight because of what people might think of me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I wish I could drastically change my weight. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Whenever I think a lot about being overweight, I feel depressed. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. I hate myself for being overweight. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. My weight is a major way that I judge my value as a person. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. I don't feel that I deserve to have a really fulfilling social life, as long as I'm overweight. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. I am OK being the weight that I am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Because I'm overweight, I don't feel like my true self. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. Because of my weight, I don't understand how anyone attractive would want to date me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

***Body Image in Pregnancy Scale (BIPS)***

Below is a list of statements dealing with aspects of your body during pregnancy. Please respond thinking about your current pregnancy and weeks' gestation. If you strongly disagree with a statement below, select 1. If you disagree with the statement, select 2. If you neither disagree nor agree with the statement, select 3. If you agree, select 4. If you strongly agree, select 5.

| | Strongly Disagree | Disagree | Neither Disagree or Agree | Agree | Strongly Agree |
|---|---|---|---|---|---|
| 1. I spend a lot of time thinking about my pregnancy weight (F1) | 1 | 2 | 3 | 4 | 5 |
| 2. I spend a lot of time thinking about my pregnancy body size (F1) | 1 | 2 | 3 | 4 | 5 |
| 3. I spend a lot of time thinking about my pregnant body shape (F1) | 1 | 2 | 3 | 4 | 5 |
| 4. I am preoccupied with the desire to have a slimmer physique during pregnancy (F1) | 1 | 2 | 3 | 4 | 5 |
| 5. I prefer not to let my partner see my naked pregnant body (F4) | 1 | 2 | 3 | 4 | 5 |
| 6. I prefer not to let other people see my naked pregnant body (F4) | 1 | 2 | 3 | 4 | 5 |
| 7. I like and appreciate my pregnant body sexually* (F4) | 1 | 2 | 3 | 4 | 5 |
| 8. I find my pregnant body sexy* (F4) | 1 | 2 | 3 | 4 | 5 |
| 9. I worry that my pregnant body would be unattractive to my partner (F4) | 1 | 2 | 3 | 4 | 5 |
| 10. I think more about how my pregnant body feels than how it looks* (F5) | 1 | 2 | 3 | 4 | 5 |
| 11. I am more concerned with what my pregnant body can do than how it looks* (F5) | 1 | 2 | 3 | 4 | 5 |
| 12. I am more concerned with how my body functions during pregnancy than how it looks* (F5) | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| 13. I am more concerned with the function of my breasts during pregnancy than how they look* (F5) | 1 | 2 | 3 | 4 | 5 |
| 14. I am more concerned with the function my stomach has during pregnancy than how it looks* (F5) | 1 | 2 | 3 | 4 | 5 |

Below is a list of questions asking about your feelings around your body changes during pregnancy. Please respond thinking about your current pregnancy and weeks' gestation. If you are strongly satisfied, select 1. If you are somewhat satisfied, select 2. If you are neither satisfied nor dissatisfied, select 3. If you are somewhat dissatisfied, select 4. If you are strongly dissatisfied, select 5. If the question is not relevant for your experience of pregnancy, please select the N/A option.

| | Strongly Satisfied | Somewhat Satisfied | Neither Satisfied nor Dissatisfied | Somewhat Dissatisfied | Strongly Dissatisfied | N/A |
|---|---|---|---|---|---|---|
| 15. How happy are you with your muscle tone during pregnancy? (F2) | 1 | 2 | 3 | 4 | 5 | N/A |
| 16. How happy are you with your body's flexibility during pregnancy? (F2) | 1 | 2 | 3 | 4 | 5 | N/A |
| 17. How happy are you with your strength during pregnancy? (F2) | 1 | 2 | 3 | 4 | 5 | N/A |
| 18. How happy are you with your energy levels during pregnancy? (F2) | 1 | 2 | 3 | 4 | 5 | N/A |
| 19. How happy are you with the pregnancy-related changes to your muscle tone? (F2) | 1 | 2 | 3 | 4 | 5 | N/A |
| 20. How happy are you with the pregnancy-related changes to your body's flexibility? (F2) | 1 | 2 | 3 | 4 | 5 | N/A |
| 21. How happy are you with the pregnancy-related changes to your strength? (F2) | 1 | 2 | 3 | 4 | 5 | N/A |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22. How happy are you with your facial complexion during pregnancy? (F3) | 1 | 2 | 3 | 4 | 5 | N/A |
| 23. How happy are you with your hair during pregnancy? (F3) | 1 | 2 | 3 | 4 | 5 | N/A |
| 24. How happy are you with the pregnancy-related changes to your skin tone? (F3) | 1 | 2 | 3 | 4 | 5 | N/A |
| 25. How happy are you with the pregnancy-related changes to your hair? (F3) | 1 | 2 | 3 | 4 | 5 | N/A |
| 26. How happy are you with your chest during pregnancy? (F7) | 1 | 2 | 3 | 4 | 5 | N/A |
| 27. How happy are you with the size/width of your shoulders during pregnancy? (F7) | 1 | 2 | 3 | 4 | 5 | N/A |
| 28. How happy are you with your ankles during pregnancy? (F7) | 1 | 2 | 3 | 4 | 5 | N/A |
| 29. How happy are you with your arms during pregnancy? (F7) | 1 | 2 | 3 | 4 | 5 | N/A |
| 30. How happy are you with your hands during pregnancy? (F7) | 1 | 2 | 3 | 4 | 5 | N/A |
| 31. How happy are you with your body's fluid retention during pregnancy? (F7) | 1 | 2 | 3 | 4 | 5 | N/A |

Below is a list of questions asking about your behaviors during pregnancy. Please respond thinking about your current pregnancy and weeks' gestation. If you have never engaged in the behavior, select 1. If you have rarely engaged in the behavior, select 2. If you have sometimes engaged in the behavior, select 3. If you have often engaged in the behavior, select 4. If you constantly engage in the behavior, select 5.

| | Never | Rarely | Sometimes | Often | Constantly |
|---|---|---|---|---|---|
| 32. Have you avoided exercising during pregnancy because your flesh might wobble? (F6) | 1 | 2 | 3 | 4 | 5 |
| 33. Have you not gone out to social occasions (e.g., parties) during pregnancy because you have felt bad about your body shape? (F6) | 1 | 2 | 3 | 4 | 5 |
| 34. Have you restricted your eating in order to feel thinner during pregnancy? (F6) | 1 | 2 | 3 | 4 | 5 |
| 35. Has worry about your shape during pregnancy made you feel you ought to exercise? (F1) | 1 | 2 | 3 | 4 | 5 |
| 36. Has worry about your weight during pregnancy made you feel you ought to exercise? (F1) | 1 | 2 | 3 | 4 | 5 |

F1 = preoccupation with physical appearance, F2 = dissatisfaction with strength-related aspects of one's body, F3 = dissatisfaction with complexion, F4 = sexual attractiveness, F5 = prioritization of appearance over function, F6 = appearance-related behavioral avoidance, F7 = dissatisfaction with body parts.

*Items to reverse code.

All items with a subscale should be averaged so that subscale scores range from 1–5; for all subscales, higher scores reflect greater body image disturbance.

***The Sexual Satisfaction Scale for Women (SSS-W)***

| **Contentment** | | | | | |
|---|---|---|---|---|---|
| 1. I feel content with the way my present sex life is | Strongly disagree 1 | Disagree a little 2 | Neither agree or disagree 3 | Agree a little 4 | Strongly agree 5 |
| 2. I often feel something is missing from my present sex life | Strongly disagree 5 | Disagree a little 4 | Neither agree or disagree 3 | Agree a little 2 | Strongly agree 1 |
| 3. I often feel I don't have enough emotional closeness in my sex life | Strongly disagree 5 | Disagree a little 4 | Neither agree or disagree 3 | Agree a little 2 | Strongly agree 1 |
| 4. I feel content with how often I presently have sexual intimacy (kissing, intercourse, etc.) in my life | Strongly disagree 1 | Disagree a little 2 | Neither agree or disagree 3 | Agree a little 4 | Strongly agree 5 |
| 5. I don't have *any* important problems are concerns about sex (arousal, orgasm, frequency, compatibility, communication, etc. | Strongly disagree 1 | Disagree a little 2 | Neither agree or disagree 3 | Agree a little 4 | Strongly agree 5 |
| 6. Overall, how satisfactory or unsatisfactory is your present sex life? | Completely satisfactory 5 | Very satisfactory 4 | Reasonably satisfactory 3 | Not very satisfactory 2 | Not at all satisfactory 1 |
| **Communication** | | | | | |
| 7. My partner often gets defensive when I try discussing sex. | Strongly disagree 5 | Disagree a little 4 | Neither agree or disagree 3 | Agree a little 2 | Strongly agree 1 |
| 8. My partner and I do not discuss sex openly enough with each other, or do not discuss sex often enough. | Strongly disagree 5 | Disagree a little 4 | Neither agree or disagree 3 | Agree a little 2 | Strongly agree 1 |

| | | | | | |
|---|---|---|---|---|---|
| 9. I usually feel completely comfortable discussing sex whenever my partner wants to. | Strongly disagree 1 | Disagree a little 2 | Neither agree or disagree 3 | Agree a little 4 | Strongly agree 5 |
| 10. My partner usually feels completely comfortable discussing sex whenever I want to. | Strongly disagree 1 | Disagree a little 2 | Neither agree or disagree 3 | Agree a little 4 | Strongly agree 5 |
| 11. I have no difficulty talking about my deepest feelings and emotions when my partner wants me to. | Strongly disagree 1 | Disagree a little 2 | Neither agree or disagree 3 | Agree a little 4 | Strongly agree 5 |
| 12. My partner has no difficulty talking about their deepest feelings and emotions when I want him to. | Strongly disagree 1 | Disagree a little 2 | Neither agree or disagree 3 | Agree a little 4 | Strongly agree 5 |
| **Compatibility** | | | | | |
| 13. I often feel my partner isn't sensitive or aware enough about my sexual likes and desires. | Strongly disagree 5 | Disagree a little 4 | Neither agree or disagree 3 | Agree a little 2 | Strongly agree 1 |
| 14. I often feel that my partner and I are not sexually compatible enough. | 5 | 4 | 3 | 2 | 1 |
| 15. I often feel that my partner's beliefs and attitudes about sex are too different from mine. | 5 | 4 | 3 | 2 | 1 |
| 16. I sometimes think my partner and I are mismatched in needs and desires concerning sexual intimacy. | 5 | 4 | 3 | 2 | 1 |
| 17. I sometimes feel that my partner and I might not be physically attracted to each other enough. | 5 | 4 | 3 | 2 | 1 |
| 18. I sometimes think my partner and I are mismatched | 5 | 4 | 3 | 2 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| in our sexual styles and preferences. | | | | | |
| **Concern - Relational** | | | | | |
| 19. I'm worried that my partner will become frustrated with my sexual difficulties. | Strongly disagree 5 | Disagree a little 4 | Neither agree or disagree 3 | Agree a little 2 | Strongly agree 1 |
| 20. I'm worried that my sexual difficulties will adversely affect my relationship. | 5 | 4 | 3 | 2 | 1 |
| 21. I'm worried that my partner may have an affair because of my sexual difficulties. | 5 | 4 | 3 | 2 | 1 |
| 22. I'm worried that my partner is sexually unfulfilled. | 5 | 4 | 3 | 2 | 1 |
| 23. I'm worried that my partner views me as less of a woman because of my sexual difficulties. | 5 | 4 | 3 | 2 | 1 |
| 24. I feel like I've disappointed my partner by having sexual difficulties. | 5 | 4 | 3 | 2 | 1 |
| **Concern - Personal** | | | | | |
| 25. My sexual difficulties are frustrating to me. | Strongly disagree 5 | Disagree a little 4 | Neither agree or disagree 3 | Agree a little 2 | Strongly agree 1 |
| 26. My sexual difficulties make me feel sexually unfulfilled. | 5 | 4 | 3 | 2 | 1 |
| 27. I'm worried that my sexual difficulties might cause me to seek sexual fulfillment outside my relationship. | 5 | 4 | 3 | 2 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 28. I'm so distressed about my sexual difficulties that it affects the way I feel about myself. | 5 | 4 | 3 | 2 | 1 |
| 29. I'm so distressed about my sexual difficulties that it affects my own well-being. | 5 | 4 | 3 | 2 | 1 |
| 30. My sexual difficulties annoy and anger me. | 5 | 4 | 3 | 2 | 1 |

Individual domain scores are computed by adding the scores of the individual items that comprise the domain. Full Scale Score = (Contentment + Communication + Compatibility + (Relational Concern + Personal Concern/2))

***Female Sexual Functioning Index (FSFI)***

1. Over the past 4 weeks, how **often** did you feel sexual desire or interest?
__ Almost always or always 5
__ Most times (more than half the time)
__ Sometimes (about half the time)
__ A few times (less than half the time)
__ Almost never or never 1

2. Over the past 4 weeks, how would you rate your **level** (degree) of sexual desire or interest?
__Very high 5
__ High
__ Moderate
__ Low
__ Very low or none at all 1

3. Over the past 4 weeks, how **often** did you feel sexually aroused ("turned on") during sexual activity or intercourse?
__ Almost always or always 5
__ Most times (more than half the time)
__ Sometimes (about half the time)
__ A few times (less than half the time)
__ Almost never or never 1

4. Over the past 4 weeks, how would you rate your **level** of sexual arousal ("turn on") during sexual activity or intercourse?
__ Very high 5
__ High
__ Moderate
__ Low
__ Very low or none at all 1

5. Over the past 4 weeks, how **confident** were you about becoming sexually aroused during sexual activity or intercourse?
__ Very high confidence 5
__ High confidence
__ Moderate confidence
__ Low confidence
__ Very low or no confidence 1

6. Over the past 4 weeks, how **often** have you been satisfied with your arousal (excitement) during sexual activity or intercourse?
__ Almost always or always 5
__ Most times (more than half the time)
__ Sometimes (about half the time)
__ A few times (less than half the time)

__ Almost never or never 1

7: Over the past 4 weeks, how **often** did you become lubricated ("wet") during sexual activity or intercourse?
__ Almost always or always 5
__ Most times (more than half the time)
__ Sometimes (about half the time)
__ A few times (less than half the time)
__ Almost never or never 1

8. Over the past 4 weeks, how **difficult** was it to become lubricated ("wet") during sexual activity or intercourse?
__ Extremely difficult or impossible 1
__ Very difficult
__ Difficult
__ Slightly difficult
__ Not difficult 5

9. Over the past 4 weeks, how often did you **maintain** your lubrication ("wetness") until completion of sexual activity or intercourse?
__ Almost always or always 5
__ Most times (more than half the time)
__ Sometimes (about half the time)
__ A few times (less than half the time)
__ Almost never or never 1

10. Over the past 4 weeks, how **difficult** was it to maintain your lubrication ("wetness") until completion of sexual activity or intercourse?
__ Extremely difficult or impossible 1
__ Very difficult
__ Difficult
__ Slightly difficult
__ Not difficult 5

11. Over the past 4 weeks, when you had sexual stimulation or intercourse, how **often** did you reach orgasm (climax)?
__ Almost always or always 5
__ Most times (more than half the time)
__ Sometimes (about half the time)
__ A few times (less than half the time)
__ Almost never or never 1

12. Over the past 4 weeks, when you had sexual stimulation or intercourse, how **difficult** was it for you to reach orgasm (climax)?
__ Extremely difficult or impossible 1
__ Very difficult

__ Difficult
__ Slightly difficult
__ Not difficult 5

13. Over the past 4 weeks, how **satisfied** were you with your ability to reach orgasm (climax) during sexual activity or intercourse?
__ Very satisfied 5
__ Moderately satisfied
__ About equally satisfied and dissatisfied
__ Moderately dissatisfied
__ Very dissatisfied 1

14. Over the past 4 weeks, how **satisfied** have you been with the amount of emotional closeness during sexual activity between you and your partner?
__ Very satisfied 5
__ Moderately satisfied
__ About equally satisfied and dissatisfied
__ Moderately dissatisfied
__ Very dissatisfied 1

15. Over the past 4 weeks, how satisfied have you been with your sexual relationship with your partner?
__ Very satisfied 5
__ Moderately satisfied
__ About equally satisfied and dissatisfied
__ Moderately dissatisfied
__ Very dissatisfied 1

16. Over the past 4 weeks, how **satisfied** have you been with your overall sexual life?
__ Very satisfied 5
__ Moderately satisfied
__ About equally satisfied and dissatisfied
__ Moderately dissatisfied
__ Very dissatisfied 1

17. Over the past 4 weeks, how **often** did you experience discomfort or pain during vaginal penetration?
__ Did not attempt intercourse n/a = 99
__ Almost always or always 1
__ Most times (more than half the time)
__ Sometimes (about half the time)
__ A few times (less than half the time)
__ Almost never or never 5

18. Over the past 4 weeks, how **often** did you experience discomfort or pain following vaginal penetration?

__ Did not attempt intercourse n/a = 99
__ Almost always or always 1
__ Most times (more than half the time)
__ Sometimes (about half the time)
__ A few times (less than half the time)
__ Almost never or never 5

19. Over the past 4 weeks, how would you rate your **level** (degree) of discomfort or pain during or following vaginal penetration?
__ Did not attempt intercourse n/a/ = 99
__ Very high 1
__ High
__ Moderate
__ Low
__ Very low or none at all 5

***Weight Class Constructs***

1. How tall are you?

For example: If you are 5 feet 8 inches then enter 5 in the "feet" box and 8 in the "inches" box

Feet _____
Inches _____

2. How much do you **currently** weigh? If uncertain, please give your best estimate. Please enter your weight in pounds (lb).
_____

3. What was your weight **just prior to pregnancy**? If uncertain, please give your best estimate. Please enter your weight in pounds (lb).
_____