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Mitigating Weight Stigma in the Medical System: Self-Compassion for Nursing Students

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Weight stigma is a form of oppression that has been shown to have a detrimental impact on the well-being of people with higher weight. Healthcare providers are one of the most common sources of weight stigma, and their stigmatizing beliefs have been found to be associated with differential care for patients with “obesity”. The current study aimed to explore the feasibility of the loving-kindness meditation (LKM) as a brief intervention that reduces weight bias in nursing students by increasing self-compassion, positive, other-focused emotions, and cognitive flexibility, in order to improve compassionate care for patients with higher weight. Participants (189 nursing students) were randomly assigned to the LKM or a body scan mindfulness meditation before engaging in an implicit bias task and answering several self-report measures. Results indicated that participants in the LKM condition endorsed significantly higher levels of positive emotionality compared to those in the control condition. Furthermore, higher levels of self-compassion were shown to be related to lower levels of weight bias. Statistically significant differences in self-compassion, cognitive flexibility, weight bias, and compassionate care were not found between the groups. The current findings provide new information regarding the complexity of weight bias, suggesting the need to further explore the mechanisms that must be targeted to effectively reduce bias. Furthermore, this study offers a new direction for weight bias research by targeting one’s compassion towards the self as well as others.

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Weight stigma is a form of oppression that has been shown to have a detrimental impact on the well-being of people with higher weight. Healthcare providers are one of the most common sources of weight stigma, and their stigmatizing beliefs have been found to be associated with differential care for patients with "obesity". The current study aimed to explore the feasibility of the loving-kindness meditation (LKM) as a brief intervention that reduces weight bias in nursing students by increasing self-compassion, positive, other-focused emotions, and cognitive flexibility, in order to improve compassionate care for patients with higher weight. Participants (189 nursing students) were randomly assigned to the LKM or a body scan mindfulness meditation before engaging in an implicit bias task and answering several self-report measures. Results indicated that participants in the LKM condition endorsed significantly higher levels of positive emotionality compared to those in the control condition. Furthermore, higher levels of self-compassion were shown to be related to lower levels of weight bias. Statistically significant differences in self-compassion, cognitive flexibility, weight bias, and compassionate care were not found between the groups. The current findings provide new information regarding the complexity of weight bias, suggesting the need to further explore the mechanisms that must be targeted to effectively reduce bias. Furthermore,

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Table of Contents

List of Tables

Chapter One: Introduction

"Overweight" and "obesity" are chronic health conditions that are a major concern of healthcare providers due to their association with poorer mental health outcomes, lower quality of life, and increased risk for deadly medical conditions (Centers for Disease Control, 2017a, 2018; Tomiyama, 2014). Using the measurement of body mass index (BMI; weight[kg]/height^2[m^2]), 71.6% of adults fall into the "overweight" or "obese" categories and 39.8% are labeled as "obese" (Centers for Disease Control, 2016). However, BMI fails to account for the aspects of bodies that influence weight (e.g., age, biological sex, muscle mass, and bone density) or other important measures of physical health (e.g., cardiorespiratory fitness), making this a flawed measure of health that is likely overestimating the prevalence of "obesity" (World Health Organization, 2020; O'Hara & Taylor, 2018).

More recently, researchers and practitioners are rejecting previous notions that "obesity" is solely due to excessive food intake and lack of physical activity and instead categorizing "obesity" as a neuropsychological disease (Jauch-Chara & Oltmanns, 2014). Consequently, this shift has allowed for a more nuanced perspective of the factors influencing an individual's weight, such as neurobiological (e.g., the chronic stress and cortisol cycle) and psychological (e.g., mood, stress, and mood disorders) components (Jauch-Chara & Oltmanns, 2014). However, the emphasis continues to be on the factors influencing health at the individual level, such as by improving stress management

techniques or engaging in psychotherapy. While these changes could positively influence one's well-being, this perspective is problematic because it continues to place responsibility on the individual rather than accounting for the structural and systemic factors that contribute to "overweight" and "obesity," including social determinants of health and weight stigma. As such, the current study specifically focused on the pervasive nature of weight stigma on a systemic level within healthcare, and potential strategies for mitigating this stigma to improve patient care.

Weight stigma is defined as the "social devaluation and denigration of people perceived to carry excess weight" (Tomiyama, 2014, p. 8). Compared to other forms of minority stereotyping, discrimination, and oppression, weight stigma is unique such that people with higher weight are a majority group discriminated against if they were a minority, are viewed as responsible for and blamed for their body size, and can experience negative in-group identification (Tomiyama, 2014). Consequently, a plethora of research has demonstrated the detrimental impact of weight stigma on the well-being of people with higher weight. For instance, research indicates that weight stigma is associated with poorer self-esteem, overall health, body esteem, and social support, as well as increased loneliness, depression, and anxiety for individuals with "overweight" or "obesity" (Phelan et al., 2015). Furthermore, experiences of weight stigma are related to negative coping behaviors in people with higher weight, such as emotional eating, negative self-talk, social isolation, and avoidance of exercising in public (Lewis et al., 2011; Carels et al., 2018). These negative psychological outcomes together with negative coping behaviors may contribute to the ongoing struggle with weight, further contributing

to poorer overall well-being for people with higher weight (Sikorski et al., 2015; Carels et al., 2018).

Unfortunately, healthcare providers of individuals with higher weight are one of the most common sources of weight stigma (Puhl & Brownell, 2006). Research indicates that between 65% and 98% of healthcare professional trainees endorse having stigmatizing beliefs about patients with "overweight" or "obesity" (Blanton et al., 2016; Puhl et al., 2014; Swift et al., 2013). Compared to their lower weight counterparts, patients with "overweight" or "obesity" are more likely to utilize healthcare resources (Bertakis & Azari, 2005), making healthcare providers an ongoing and significant point of contact for these patients and increasing patients' likelihood of experiencing weight stigma. Prior research suggests that some patients with "obesity" would rather avoid medical appointments altogether rather than receive the services and care they need in order to avoid stigma from their healthcare provider (e.g., Alberga et al., 2019). Additionally, healthcare providers' stigmatizing beliefs about patients with "overweight" and "obesity" have been found to be associated with differential care for these patients (e.g., attributing all health issues to weight; Gudzune et al., 2014). Therefore, it is essential that we determine ways to address the perpetuation of weight stigma in patient-provider relationships so that patients can safely and comfortably engage in this important aspect of their overall care.

Several factors have been found to be associated with weight stigma in healthcare providers, such as beliefs about the etiology of "obesity," level of empathy for patients, and perceptions of control over "obesity" (Cohen & Persky, 2019; Jung et al., 2015; Khan et al., 2018; Phelan et al., 2018). As such, research has begun to explore the role of

psychoeducational interventions that target beliefs about etiology of "obesity" and perceptions of control over "obesity" for mitigating weight bias in healthcare providers (e.g., Diedrichs & Barlow, 2011). While results indicate some improvement in weight stigma from these interventions, there is a need for interventions that address the complex, multi-faceted nature of this stigma (e.g., the associated cognitive and emotional processes).

With regard to the associated cognitive and emotional processes in weight bias, the literature provides evidence for various avenues to reduce this implicit bias. Preliminary research suggests that inducing empathy and promoting perspective taking may be favorable methods to reduce weight bias given the use of these strategies to reduce other forms of bias (e.g., HIV-related bias in the LGBT+ community; Gloor & Puhl, 2016). Furthermore, people who have greater empathy for individuals with higher weight are less likely to demonstrate weight stigma (Khan et al., 2018). Additionally, induction of positive, other-regarding emotions (Griskevicius et al., 2010) and cognitive flexibility (Moore & Malinowski, 2009) have been found to be related to in shifts in cognitive processing that are associated with decreased implicit bias. Therefore, interventions aimed at increasing empathy, positive-other-regarding emotions, and cognitive flexibility could result in the reduction of implicit weight bias.

Within the past decade, researchers have turned their attention to a relatively new construct that builds on the idea of being compassionate towards others by encouraging a positive, affirmative, non-judgmental attitude towards oneself – self-compassion (Neff, 2003). In addition to brief self-compassion interventions improving psychological well-being in adults (Baer et al., 2012), recent literature is starting to evince the efficacy of

self-compassion interventions for improving interpersonal relationships, including between healthcare providers and their patients (e.g., Rao & Kemper, 2017). One empirically supported intervention that has promise for improving the patient-provider relationship is the loving kindness meditation (LKM). The LKM has been found to be associated with improved positive emotions, confidence in providing compassionate care, social connectedness, and empathy (Rao & Kemper, 2017; Seppala et al., 2014), all of which relate to the patient-provider relationship. Furthermore, LKM may be a viable option for reducing bias by increasing cognitive flexibility, resulting in individuals not relying on stereotypes or faulty thinking when engaging with patients with higher weight (Shahabi et al., 2019). Consequently, it is important to understand the ways in which LKM, in particular, could potentially help mitigate weight bias in healthcare providers.

The current study aimed to explore the efficacy of LKM for reducing weight bias in nursing students, specifically. Nurses make up the largest proportion of healthcare providers in the United States, with 3.8 million registered nurses and 200,000 more positions created each year (American Association of Colleges of Nursing, 2019). Nurses play an active role in "obesity" prevention and management, including promoting lifestyle changes (e.g., diet and exercise) and facilitating weight management programs (Lazarou & Kouta, 2010). As such, nurses are at the forefront of healthcare for patients with higher weight and may have more direct contact with patients compared to other healthcare providers. Consistent with the literature on weight bias in healthcare providers broadly, nurses also endorse these biases (Garcia, 2016). Furthermore, the length of time required for these interventions is an important consideration given the paucity of time available to healthcare providers. Therefore, we aimed to explore the feasibility of LKM

as a brief intervention that reduces weight bias by increasing self-compassion, positive, other-focused emotions, and cognitive flexibility, in order to improve compassionate, affirmative care for patients with higher weight.

Medical Perspectives on Higher Weight

"Overweight" and "obesity" are chronic health conditions that are a major concern of healthcare providers due to their association with poorer mental health outcomes, lower quality of life, and increased risk for deadly medical conditions (Centers for Disease Control, 2017a, 2018; Tomiyama, 2014). In the medical system, individuals are identified as being "overweight" or "obese" using a measurement of their body mass index (BMI), which is calculated using height and weight (i.e., BMI = weight [kg]/height^2 [m^2]). More specifically, a BMI of 18.5 or under is categorized as "underweight," 18.5 to 24.9 is categorized as "healthy," 25.0 to 29.9 is categorized as "overweight," and 30.0 and higher is categorized as "obese" (Centers for Disease Control, 2017b). In the United States more than half of Americans are affected by these conditions: 71.6% of adults fall into the "overweight" or "obese" categories, 39.8% are labeled as "obese," and one in six children and adolescents are labeled as "obese" (Centers for Disease Control, 2016; National Institute of Diabetes and Digestive and Kidney Diseases, 2017).

While healthcare providers utilize BMI and its associated categories to assess patients' physical health and make medical recommendations, the BMI statistic is flawed in both in its simplicity and application. BMI fails to account for aspects of bodies that influence weight, such as age, biological sex, muscle mass, and bone density, likely resulting in an overestimation of the prevalence of "obesity" (World Health Organization,

2020). Furthermore, BMI does not incorporate other important measures of physical health, such as cardiorespiratory fitness and physical activity that are associated with lower mortality risk (O'Hara & Taylor, 2018). Consequently, a single statistic that is often utilized for medical treatment recommendations fails to paint an accurate and full picture of a patient's overall physical health (Tomiyama et al., 2016).

Despite the problematic nature of BMI and the associated categorizations, researchers have been examining the various factors that contribute to "obesity." Consequently, researchers are now categorizing "obesity" as a neuropsychological disease based on the relevant neurobiological and psychological components (Jauch-Chara & Oltmanns, 2014). Psychologically, appetite, weight gain, and "obesity" have been found to be strongly related to mood, stress, and mood disorders. Neurobiologically, chronic stress stimulates the release of cortisol, resulting in increased food intake (particularly high-fat foods), blood pressure and heart rate, and suppression of insulin secretion, all of which contribute to higher weight. Additionally, overeating stimulates the same neural mechanisms implicated in addiction (e.g., reward processing, motivation, decision-making; Jauch-Chara & Oltmanns, 2014). The recognition of these psychological and neurobiological components results in the rejection of previous conventional models that solely attribute obesity to excessive food intake and a lack of physical activity (Jauch-Chara & Oltmanns, 2014). However, our understanding of "overweight" and "obesity" is complex and requires close attention to structural and systemic factors such as social determinants of health and societal stigma.

Weight Stigma

Weight stigma, or the "social devaluation and denigration of people perceived to carry excess weight" (Tomiyama, 2014, p. 8), is a particular experience of those who are higher weight that has received increased recognition. It may be important to view weight stigma as a separate, unique experience compared to other forms of minority stereotyping, discrimination, and oppression. Tomiyama (2014) argues that weight stigma differs from other general social psychological theories of stigma for several reasons. First, individuals with "overweight" or "obesity" are a majority in our country (National Institute of Diabetes and Digestive and Kidney Diseases, 2017), but they are discriminated against as if they are a minority group. Second, body size, compared to racial/ethnic identities or biological sex, is perceived as an identity that people can control, which increases perceived responsibility of and blame towards those individuals. Finally, compared to other minority groups that may experience positive in-group identification, individuals with higher weight may have a tendency to negatively identify with this group. As such, these individuals may be particularly susceptible to internalized weight bias (Tomiyama, 2014).

Prior research has divided weight stigma into three different categories: (1) direct, (2) environmental, and (3) indirect (Lewis et al., 2011; see Table 1). Direct stigma can be described as experiences that encompass overt attitudes or behaviors that stigmatize individuals with higher weight. Examples of direct stigma include being laughed at when exercising, being the victim of bullying at school, and experiencing verbal abuse when eating in public (Lewis et al., 2011). Environmental stigma includes aspects of the environment that stigmatize individuals with "overweight" or "obesity," such as seating

in medical settings that are not appropriate for patients with "overweight" or "obesity," seatbelts on airplanes that are too short, and a lack of plus-size athletic clothing in stores (Lewis et al., 2011). Finally, indirect stigma includes experiences of weight stigmatization that are subtle and subjective. Examples of indirect stigma include the perception that family and friends are embarrassed to be seen with their companion with higher weight, the feeling that others are watching these individuals as they buy food in public, and the experience of being ignored by customer service in stores (Lewis et al., 2011). Unfortunately, family, friends, and doctors of individuals with higher weight appear to be some of the most common sources weight stigma (Puhl & Brownell, 2006). Given the prevalence of individuals in the United States who are labeled as "overweight" or "obese" and the pervasive nature of weight stigma in their lives, the psychological and social consequences of weight stigmatization warrant further attention.

Table 1: Types of Weight Stigma

Type of Stigma	Description	Example
Direct	Overt attitudes or behaviors that stigmatize individuals with "overweight" or "obesity"	Bullying related to weight
Environmental	Aspects of the environment that stigmatize individuals with "overweight" or "obesity"	Seatbelts on airplanes that are too short
Indirect	Weight stigmatization that is subtle and subjective	Feeling ignored by customer service staff
Self-stigma	Negative emotions and beliefs associated with being overweight or obese and fear of being discriminated against	Feeling responsible for and shameful of current weight

Attention has recently turned to language use in research and professional practice to describe individuals with higher weight due to the role of terminology in perpetuating weight stigma (Meadows & Danielsdottir, 2016). Given the American Medical Association's (AMA) categorization of "obesity" as a disease in 2013 (MacInnis et al., 2019), "obese" and "obesity" are frequently utilized to describe people with higher weight both medically and in the larger society (Frellick, 2013). Following the footsteps of disability advocates, researchers recently adopted a person-first perspective when describing individuals with higher weight, using terms like "people with overweight" or "people with obesity" (e.g., Puhl et al., 2014). However, studies exploring patient preferences regarding language use have found that "obesity" is actually one of the least desired terms compared to more neutral terms like weight (e.g., Thomas et al., 2008). As such, while person-first language attempted to reduce the stigma associated with higher weight, the word "obesity" appears to have a negative connotation regardless of how it is used.

Given that individuals with higher weight have differing opinions and preferences regarding language use, a consensus does not currently exist about the preferred body-affirming and supportive language to use when referring to this group of people (Meadows & Danielsdottir, 2016). For instance, the word "fat," which is largely considered a pejorative term, has been reclaimed by the community and is used within the fat acceptance movement (Saguy & Ward, 2011). Furthermore, more recent literature exploring the lived experiences of this group of people have continued to utilize person first language, but have removed the term "obesity" altogether, instead referring to people as having "higher weight" (e.g., Jiménez-Loaisa et al., 2019). Therefore, in the current

study, “higher weight” will be used to describe individuals who have been diagnosed with “overweight” or “obesity” in the medical setting as an attempt to not further perpetuate the stigma associated with this terminology. However, research studies that have utilized the language of “overweight” and “obesity” will be cited as such in order to accurately communicate their findings, although the problematic nature of this language is recognized.

Weight Self-Stigma

In addition to the various external sources of weight stigma, researchers have also examined the construct of weight self-stigma, which encompasses the negative emotions and beliefs associated with having higher weight, as well as the fear of being discriminated against because of one’s weight (Palmeira et al., 2016). Self-blame and shame appear to be prominent components of weight self-stigma due to some individuals’ beliefs that they are deserving of others’ discriminatory behavior. Consequently, some individuals with “obesity” may struggle to respond to these stigmatizing acts because they feel a sense of responsibility for their current situation (Lewis et al., 2011). Taking together the negative in-group association (Tomiyama, 2014) and the sense of responsibility individuals with “obesity” have for their experiences of discrimination (Lewis et al., 2011), it is unsurprising that approximately 70% of medical students with “overweight” or “obesity” endorsed experiencing both explicit and implicit self-stigma (Phelan et al., 2015). Therefore, it can be concluded that individuals with higher weight may experience stigma originating from both external and internal sources, which may have significant implications for their overall well-being.

Internalization of the Thin Ideal

Considering the internal and external sources of weight stigma, it is also important to acknowledge the role of societal messages related to "ideal" body types and how that influences one's perception of higher weight. The thin ideal represents the societal definition of an attractive female body as slim and having little body fat. Internalization of the thin ideal is the "extent to which an individual cognitively 'buys into' socially defined ideals of attractiveness and engages in behaviors designed to produce an approximation of these ideals" (Thompson & Stice, 2001, p. 181). This internalization has been found to be related to body dissatisfaction, dieting, and negative affect, further contributing to disordered eating behaviors (e.g., Low et al., 2003).

Dondzilo and colleagues (2019) examined the relationship between the drive for thinness and the fear of fat and disordered eating constructs. Participants included 95 women undergraduate students with a mean age of 21.02 years (range 17-54) and a mean BMI of 22.17 (*SD* = 4.41). Results demonstrated that a strong preference for thin bodies was strongly associated with the internalization of the thin ideal, dietary restraint, and body dissatisfaction (Dondzilo et al., 2019). While a plethora of literature has demonstrated the negative impact of this internalization on physical and emotional well-being, there is a lack of literature exploring the impact of this internalization on one's perspectives of others with higher weight. Therefore, there is a need for research exploring the influence of this internalization on the efficacy of interventions aimed to mitigate weight stigma.

Weight Stigma and Patient Well-Being

Sikorski and colleagues (2015) described weight stigma and discrimination as chronic stressors that have a significant impact on psychological and physical health outcomes. Furthermore, across the three types of weight stigma (i.e., direct, environmental, and indirect), indirect stigma has been found to be most negatively associated with the health and well-being of individuals with higher weight (Lewis et al., 2011). Phelan and colleagues (2015) explored the relationship between weight stigma and well-being within a sample of 4,687 first-year medical students from 49 different medical schools in six regions of the United States. Because weight stigma is prevalent in healthcare providers, the authors hypothesized that medical students would experience significant stigma. Students were predominately White (63.3%), equally men and women, and had an average age of 23.9 years. Participants' BMI was calculated using self-reported height and weight: 3.5% were categorized as "underweight," 72.1% as "normal-weight," 19.7% as "overweight," and 4.8% as "obese." All students were asked to complete measures assessing self-esteem, physical health, fatigue, and emotional health, sense of power/control over their lives, social support, substance use, self-stigma, and perceived stigma. Results indicated that experiences of weight stigma have been found to be associated with lower self-esteem ($b = -0.11$), poorer overall health ($b = -0.11$), lower body esteem ($b = -0.07$), increased loneliness ($b = 0.26$), lower social support ($b = -0.21$), increased depression ($b = 0.20$), and increased anxiety ($b = 0.18$) for medical students with "overweight" or "obesity" (Phelan et al., 2015). Consequently, it appears that psychological risk factors associated with "overweight" and "obesity" (e.g., loneliness, lower self-esteem) together with group-specific processes (e.g.,

discrimination, weight stigma) are associated with the overall psychological and physical well-being of individuals with higher weight (Sikorski et al., 2015).

In addition to the negative association between weight stigma and physical and psychological health, individuals who experience this discrimination may cope with these experiences using negative coping behaviors. Lewis and colleagues (2011) conducted a qualitative study exploring the stigmatizing experiences of adults with "obesity" and their subsequent responses. Semi-structured interviews were conducted with 141 Australian adults, 74.5% of whom were women, had an average age of 44.8 years, and had an average BMI of 39.3 (range 30.0-71.7). The majority of participants had a university or post-graduate degree (62.4%) and a gross income between $34,500 and $69,000 per year (41.8%). Results indicated that adults with "overweight" or "obesity" engaged in negative coping behaviors when experiencing direct, environmental, and/or indirect stigma, such as emotional eating, avoidance of exercising or eating in public, and disengaging from social relationships (Lewis et al., 2011).

Carels and colleagues (2018) further explored this relationship between stigma and coping behaviors, looking specifically at the differences in coping behaviors based on daily levels of internalized weight-bias. Sixty-six adults categorized as "overweight" or "obese" completed a daily diary for 30 days to track internalized weight-bias, mood, coping behaviors, body appreciation, exercise behaviors, and dietary habits using Likert scales. Participants were predominantly White (59%), women (85%), college-educated (89%), and had a gross income over $30,000 (83%) and an average BMI of 36.0 (range 26.1-59.6). Results indicated that higher levels of internalized weight bias were more strongly associated with negative coping behaviors, such as negative self-talk, emotional

eating, social isolation, and punishing oneself (Carels et al., 2018). Consequently, these negative coping behaviors may contribute to the ongoing struggle with weight loss and weight management, further contributing to poorer overall well-being (Sikorski et al., 2015; Carels et al., 2018).

To illustrate the "vicious cycle" of weight stigma and the well-being of individuals with higher weight, Tomiyama (2014) theorized the cyclic/obesity weight-based stigma (COBWEBS) model. This model incorporates components of social psychology, health psychology, and neuroendocrinology, which help depict the complexity of the weight management process. The four components of the model include: (1) weight stigma characterized as a psychological stressor, (2) mechanisms through which weight stigma stress influences weight gain, (3) weight stigma undermining weight loss, and (4) the positive feedback loop between weight loss and weight stigma (Tomiyama, 2014). Similar to the assertion by Sikorski et al. (2015), Tomiyama (2014) also categorized weight stigma as a psychological stressor, or a negative emotional experience, given the negative impact of weight stigma on various psychological outcomes. This component of the COBWEBS model builds on the literature examining social stigma as a stressor; however, most literature has examined this stigma for racial/ethnic and sexual minorities and has not yet explored this concept for individuals with higher weight.

Through the COBWEBS model, Tomiyama (2014) also explored the mechanisms through which weight stigma stress influences weight gain, including eating behavior mechanisms, physiological mechanisms, and emotional mechanisms. With regard to eating behaviors, experiences of weight stigma can result in emotional eating, or

increased eating for the purpose of self-soothing in times of distress. Furthermore, stress due to social stigma has been found to be related to increased cortisol levels (i.e., physiological mechanism), which in turn influences fat deposition and food consumption.

Shame is an emotional mechanism through which cortisol levels are also impacted, which has been previously established in the literature (Kemeny et al., 2004). Individuals with higher weight may experience shame for a variety of reasons, including cultural ideals of beauty, unsuccessful weight loss attempts, overeating behaviors, and heightened awareness of stigmatizing events. However, a direct link between these mechanisms (i.e., weight stigma and shame related to weight) and increased cortisol levels has not yet been established (Tomiyama, 2014).

Tomiyama (2014) discussed the relationship between weight stigma and weight gain in the third component of the COBWEBS model. Prior research has demonstrated that experiences of weight discrimination increase the likelihood of future weight gain and "obesity" for both individuals with and without "obesity" (Sutin & Terracciano, 2013). Therefore, Tomiyama (2014) postulated that individuals with higher weight engage in a process of entering, fighting, and exiting the cycle of weight gain. However, weight stigma and the aforementioned components of the COBWEBS model likely increases the risk of re-entering the cycle and gaining more weight (Tomiyama, 2014). Finally, Tomiyama (2014) describes weight gain and weight stigma as a positive feedback loop. While more research is needed in this area, it appears that the weight gain resulting from stress-induced weight stigma puts individuals at risk for increased stigma in the future. As such, individuals with higher weight may likely feel stuck in this "vicious cycle" despite their efforts to create changes in their lives.

Weight Stigma and Disordered Eating Behaviors

In addition to the aforementioned negative outcomes associated with weight stigma, prior research has explored the relationship between this stigma and disordered eating behaviors. In a meta-analysis conducted by Puhl and Suh (2015) exploring the relationship between stigma and eating disorders, results suggested negative outcomes for both children and adults with higher weight who experience weight stigma. For instance, increased weight-related bullying was associated with increased binge eating in children. In adult women who were "overweight," increased experiences of weight stigma were associated with greater calorie consumption and feeling less in control when eating. Additionally, greater internalization of weight stigma was found to be associated with increased binge eating behaviors in adults (Puhl & Suh, 2015). Consequently, the authors conclude that weight stigma needs to be considered and incorporated into treatment of individuals with higher weight and eating disorders.

Furthermore, prior research has demonstrated that the internalization of bias mediates the relationship between stigmatizing experiences and disordered eating behaviors in adults, with a higher prevalence of this internalization occurring in women than in men (Boswell & White, 2015). Additionally, women were more likely to endorse both cognitive (e.g., depressive symptoms) and behavioral components of disordered eating behaviors, whereas men were more likely to only endorse the behavioral components (e.g., episodes of binge eating). Compared to men, it was hypothesized that women may experience greater internalization of weight bias due to either greater exposure to weight stigma and/or more internalization of this stigma (Boswell & White, 2015).

Almenara et al. (2017) specifically examined the factors that mediate this relationship between weight stigma and disordered eating behaviors in women. Results indicated that self-esteem and fear of negative appearance evaluation both play significant roles in this relationship. The authors hypothesized that women who experience weight stigma incorporate this experience into their self-evaluation, resulting in an increased risk for disordered eating behaviors. Additionally, stigmatizing experiences could negatively impact women's self-esteem and consequently result in the desire to engage in more extreme dieting behaviors (Almenara et al., 2017). These findings have significant implications for the treatment of patients with higher weight, such that healthcare providers could increase patients' risk for disordered eating behaviors when stigmatizing patients in medical appointments. As a result, it is essential that weight stigma is addressed and mitigated at the provider level to prevent further harm to patients with higher weight.

Social Determinants of Health, Intersectional Identities, and Weight Stigma

When exploring experiences of weight stigma, it is important to account for differential experiences of weight stigma related to social determinants of health, health disparities, and intersectionality of identities. Given that weight bias, in part, originates from beliefs about controllability of weight (Garcia, 2016), it is necessary to highlight the systemic factors that significantly influence individuals' access to health-related resources associated with weight and overall health. Social determinants of health are defined as "conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks," (Office of Disease Prevention and Health Promotion, 2019,

"Understanding Social Determinants of Health" section). Examples of social determinants of health include, but are not limited to, access to healthcare services, quality of education, public safety, socioeconomic conditions, language and literacy, culture, and availability of resources to meet daily needs. Lack of access to social determinants of health have been associated with health disparities for individuals with minority identities such as race, ethnicity, gender identity, sexual orientation, ability status, and socioeconomic status (National Academies of Sciences, Engineering, & Medicine, 2017).

The relationship between higher weight and various social determinants of health (i.e., access to health care services, food resources, education level, and socioeconomic status) has been explored, and less access to these resources and services may be related to a greater likelihood of being "obese" (e.g., Sheesley, 2016; West & Jeffery, 2018). Research indicates that the distribution of food service outlets is associated with the level of wealth and racial/ethnic minorities, such that more food service outlets are available in wealthier, Whiter communities (Jack et al., 2012). Furthermore, racial/ethnic minorities are eight times more likely to live in low-income neighborhoods, therefore reducing their access to healthy food options. As a result, racial/ethnic minority individuals are at increased risk for higher weight and related conditions, such as Type 2 Diabetes (Jack et al., 2012). Statistics indicate that "obesity" disproportionally impacts Black Americans (48.4%) and Latinx Americans (42.6%) compared to White Americans (36.4%; National Institute of Diabetes and Digestive and Kidney Diseases, 2017). Consequently, individuals with racial/ethnic minority identities, in particular, may be at greater risk for experiencing weight stigma compared to their majority counterparts.

With these statistics in mind, demographics are only a starting point for understanding the disproportional impact of "obesity" on patients with minority identities. These statistics fail to account for systems of oppression and marginalization that directly impact individuals' access to social determinants of health (Jack et al., 2012). Additionally, evidence suggests that experiences of weight-based discrimination and oppression results in increased levels of cortisol, which is related to weight gain and poorer overall health (Tomiyama, 2014). As such, it is important to not place the blame on the individual, but rather understand and dismantle the systemic-level issues that are negatively impacting these minority groups.

Weight Stigma and Patient Healthcare

Compared to their lower weight counterparts, patients with "overweight" or "obesity" are more likely to utilize healthcare resources, such as primary care, specialty care, and diagnostic services (Bertakis & Azari, 2005). Consequently, the cost of care for these patients is not only high but also has significant implications for the medical system, with estimates around $342 billion for adults with "obesity" in 2013 (Biener et al., 2017). Given the higher rates of medical care utilization and subsequent healthcare costs, healthcare providers are an ongoing and significant point of contact for these patients, increasing patients' likelihood of experiencing weight stigma. While there are many sources of and contributing factors to weight stigma, it is important that we address the stigma that occurs in the patient-healthcare provider relationship given the unique nature of this relationship.

Compared to other interpersonal relationships (e.g., family, friends), healthcare providers are responsible for preventative, routine, and diagnostic medical care that is

essential to these patients' lives and overall well-being. While patients with higher weight could potentially disengage from stigmatizing relationships in other parts of their lives, the relationship with their healthcare provider is one that is necessary for patients to maintain for their medical care. However, prior research suggests that some patients with "obesity" would rather avoid appointments altogether rather than receive the services and care they need (e.g., Alberga et al., 2019). Therefore, it is essential that we determine ways to address the perpetuation of weight stigma in patient-provider relationships so that patients can safely and comfortably engage in this important aspect of their overall care.

Research indicates that the majority of healthcare professional trainees endorse having stigmatizing beliefs about patients with "overweight" or "obesity" (e.g., Blanton et al., 2016). Swift and colleagues (2013) explored the prevalence and predictors of weight bias and in healthcare trainees in the United Kingdom, including nursing, medical, dietetics, and nutrition students. Participants were recruited through teaching sessions at their university and asked to complete the Fat Phobia Scale (F-scale) and Beliefs about Obese People (BAOP) scale as well as answer a question about their level of contact with people with "obesity." Of the 1130 students who participated in the study, 79.2% were women, 7.9% were considered "underweight," 76.9% were considered "normal weight," 15.2% were considered "overweight" or "obese," had an average BMI of 21.5 (*IQR* = 3.93), and had an average age of 20.3 years (*IQR* = 2.17; Swift et al., 2013). Results indicated that, on average, trainees had an overall negative attitude towards patients with "obesity," with 10.5% having "high" levels of fat phobia. Notably, participants with a higher self-reported BMI tended to demonstrate lower levels of fat phobia, suggesting that these trainees have more empathy for patients with "obesity" and are less likely to

hold stigmatizing beliefs. Level of contact with people with "obesity" was not predictive of levels of stigma, indicating that interventions for addressing weight stigma should focus on building empathy rather than just increasing contact with patients with "obesity" (Swift et al., 2013).

In a similar study by Puhl and colleagues (2014), 107 post-graduate healthcare students from a university in the northeast United States were surveyed to assess the prevalence, predictors, and observations of weight bias in training. Healthcare disciplines included physician associate, clinical psychologist, and psychiatric resident, and participants were 68% women, 75% White, had an average age of 31.34 years (*SD* = 8.31) and an average BMI of 23.25 (*SD* = 4.01; Puhl et al., 2014). Participants were recruited prior to classes about the clinical implications of "obesity" stigma in their respective programs. Measures included the Universal Measure of Bias-FAT (UMB-FAT), a measure assessing beliefs about the causes of "obesity," the Rosenberg Self-Esteem Scale (RSE), the Eating Disorder Examination Questionnaire (EDE-Q), as well as measures created for the current study measuring perceived bias in healthcare (e.g., peers, educators), attitudes towards patients with "obesity," and perceptions of treatment compliance of patients with "obesity." Results indicated that approximately 33% of participants endorsed beliefs that patients with "obesity" lacked motivation to make health behavior changes, 36% felt frustrated when working with these patients, and 36% described their patients as non-adherent to medical treatment (Puhl et al., 2014). Given the prevalence of these stigmatizing beliefs about patients with higher weight, attention is called to the sources of these biases in order to better understand how to dismantle them to improve care for patients.

Factors Contributing to and Mitigating Weight Stigma

Several factors have been found to be associated with weight stigma in healthcare providers, including beliefs about the etiology of "obesity," perceptions of control over "obesity," attitudes about characteristics of patients, empathy for patients, and identification of "obesity" as a disease. Furthermore, the attribution of "obesity" to behavioral factors rather than genetic and/or psychological factors is related to more stigmatizing beliefs about these individuals (Cohen & Persky, 2019; Jung et al., 2015; Khan et al., 2018; Phelan et al., 2015; see Table 2).

Behavioral Factors

In regard to behavioral factors, caloric intake, level of physical activity, and perceived will-power and motivation were reported as underlying causes of "obesity" by dietitians and nutritionists (Jung et al., 2015). Cohen and Persky (2019) conducted an intervention study exploring the impact of differing types of education about "obesity" on medical recommendations for patients with "obesity." Participants included 119 physician trainees, ranging from first to fourth year medical students, recruited from the Washington, D.C. metropolitan area. Participants were randomly assigned to one of three conditions: (1) article about the genetic causes of "overweight," (2) article about the behavioral causes of "overweight," or (3) article about headache pain (i.e., control condition). After reading the article, the physician trainees were asked to provide treatment recommendations to a patient with "obesity" struggling with knee pain, shortness of breath, and a hand rash through a virtual reality medical environment. Results demonstrated that physician trainees who received education solely about the behavioral factors associated with "obesity" utilized more stigmatizing communication

(i.e., using words like “fat,” “obesity,” “obese,” and/or “morbidly obese”) with patients with “overweight” or “obesity” compared to those receiving information about the genetic causes. Overall, results from these studies indicate that focusing only on the behavioral factors related to higher weight further perpetuates stigma about patients with higher weight that can negatively impact medical recommendations from healthcare providers.

Additionally, perceptions of control over higher weight are related to weight stigma, such that providers who endorse weight stigma also believe that patients are able to control their weight via behavioral changes (Garcia, 2016; Wang et al., 2016). In a study exploring the relationship between locus of control and weight bias in Chinese Registered Nurses (RNs), nurses who believed “obesity” was out of the control of the individual (e.g., genetic factors) were more likely to hold positive attitudes towards those patients (Wang et al., 2016). On the other hand, nurses who endorse beliefs about patients’ controllability over “obesity” also indicate beliefs that these patients are responsible for their weight, connecting to greater weight bias (Garcia, 2016).

Along with perceptions of control, providers who hold negative attitudes about characteristics of patients (e.g., lifestyle factors, emotional well-being) are more likely to demonstrate weight stigma (Garcia, 2016). More specifically, nurses who describe patients with “overweight” or “obesity” as lazy, helpless, and/or lacking control of their lifestyle are more likely to hold stereotypical, negative beliefs about these patients. Consequently, these negative attitudes are associated with nurses feeling dread, frustration, and avoidance, and victim blaming when working with these patients (Garcia, 2016).

Psychological Factors

Research suggests that compared to both behavioral and genetic explanations for "obesity," belief in the psychological etiology of "obesity" is associated with the least stigmatizing beliefs about patients (Khan et al., 2018). Psychological contributors to "obesity" include, but are not limited to, chronic stress, mood disorders, eating disorders, disordered eating behaviors, and previous trauma (Jung et al., 2015; Khan et al., 2018). It has been hypothesized that an emphasis on psychological factors, which are viewed as outside of the control of the patient, yield more favorable attitudes towards patients with "obesity." Furthermore, beliefs in psychological explanations for "obesity" could result in a more empathic response from providers, resulting in decreased stigma (Khan et al., 2018). Consequently, these findings have important implications for the conceptualization of "obesity" in patient healthcare.

Prior research indicates that weight stigma is inversely related to empathy for individuals with "obesity," indicating that people who have greater empathy for individuals with higher weight are less likely to demonstrate weight stigma (Khan et al., 2018). To better understand the relationship between beliefs and attitudes about the etiology of "obesity," weight stigma, and empathy, Khan and colleagues (2018) conducted a study with 463 adults in the United States. Participants (65.6% women, mean age = 39 years, range 18-57 years, average BMI = 27, range 16-38) were randomly assigned to three conditions: (1) psychological etiology condition, (2) genetic etiology condition, or (3) behavioral etiology condition. After being shown a picture of a man with "obesity," participants were provided with a brief description of the person's name, age, career, BMI, and the etiology of his "obesity." They were then asked to complete the Fat

Phobia Scale (FPS; Bacon et al., 2001) and the Stereotypes Checklist (Fiske et al., 2002) to assess the expression of stigma towards the hypothetical target as well as measures assessing beliefs about controllability over "obesity" and empathy towards the patient (Communication Emotional Response Scale; Batson et al., 1983).

Across all conditions, participants had a mean Fat Phobia Scale score of 4.88 (*SD* = 0.87; range 1-7) and Stereotypes Checklist score of 2.62 (*SD* = 0.90; range 1-7), with higher scores indicating higher levels of fat phobia and negative stereotypes, respectively. Within the three conditions, participants in behavioral etiology condition had the highest Fat Phobia score of 5.17 (*SD* = 0.84) and Stereotypes Checklist score of 2.78 (*SD* = 0.91). Furthermore, results indicated that empathy mediates stigmatizing beliefs about individuals with "obesity," indicating the power of empathy in mitigating weight stigma. Furthermore, greater empathy for patients was found to be related to beliefs regarding the psychological etiology of "obesity" compared to genetic or behavioral explanations (Khan et al., 2018).

Chronic Disease Model

Notably, providers who view "obesity" as a disease are more likely to provide care that is characterized by increased empathy, less negativity, more positive affect, and less blame (MacInnis et al., 2019). As such, the quality of care and strength of relationships with patients are significantly improved. It is hypothesized that by categorizing "obesity" as a disease, providers are less likely blame patients for their weight, resulting in decreased bias (MacInnis et al., 2019). Considering the number of factors contributing to weight stigma as well as the prevalence of stigma among

healthcare providers, it is unsurprising that patients report negative experiences in their healthcare.

Table 2: Hypothesized Etiology of "Obesity" and Associated Factors

Belief about the Etiology of "Obesity"	Examples of Associated Factors
Psychological	Chronic stress
	Mood disorders
	Previous trauma
	Eating disorders
	"Obesity" categorized as a chronic disease
Genetic	Metabolic disorders
	Neuroendocrinology
	Hormonal disease
	"Obesity" categorized as a chronic disease
Behavioral	Caloric intake
	Exercise
	"Laziness"
	Lack of willpower

Impact of Weight Stigma on Patient Healthcare

Healthcare providers' stigmatizing beliefs about patients with "overweight" and "obesity" have been found to be associated with differential care for these patients (Gudzune et al., 2014). Furthermore, ways in which our medical system is constructed further perpetuates these negative attitudes. In a thematic analysis of studies exploring the general experiences of patients with "obesity" in healthcare, patients reported concerns related to perceived judgment, patronizing and disrespectful treatment, centralization of health issues around weight (i.e., attributing all health issues to higher weight), lack of trust in providers, and differential treatment (Alberga et al., 2019; Williams, 2018). More specifically, individuals with "obesity" experienced their providers as simplifying the weight management process by providing a simplistic solution (e.g., decreasing caloric

intake). They also described experiences of providers attributing all health issues to weight, resulting in patients feeling frustrated and unheard (Alberga et al., 2019). In a study conducted by Williams (2018), one participant described this experience with medical providers as being in a "waiting game," waiting for them to make a comment about their weight or say something hurtful (p. 67).

Concerns regarding patient-provider communication have also been cited, such as a lack of questions related patients' lifestyle, fewer statements of approval, and decreased time spent with patients compared to patients without "overweight" or "obesity" (Wong et al., 2014; Cole et al., 2016). Cole and colleagues (2016) demonstrated that pregnant women with "overweight" or "obesity" were asked one third fewer lifestyle questions (i.e., health-related behaviors and habits) and received one half less lifestyle information (e.g., information about nutrition, tobacco use, physical activity) from their OB-GYN providers compared to their lower weight counterparts. Additionally, these providers engaged in less rapport-building strategies, such as using approval statements and communicating concern for the patient (Cole et al., 2016). Finally, patients with "overweight" and "obesity" noted feeling that providers in outpatient medical clinics did not spend enough time with them in the appointment or clearly explain things, which was the opposite from reports of patients without "overweight" or "obesity" (Wong et al., 2014).

Finally, in a meta-analysis conducted by Alberga and colleagues (2019) about the influence of weight bias on healthcare engagement and utilization for patients with "obesity," issues related to the medical environment and routine practices negatively impacted patients' experiences, such as poorly fitting gowns, blood pressure cuffs, and

examination tables, as well as the fear of being weighed and exposing their bodies during appointments. Consequently, 32% of women with "obesity" and 55% of women with "severe obesity" reportedly delayed or cancelled their healthcare appointments to avoid being weighed or exposing their bodies to healthcare providers. Furthermore, 19% of patients indicated that they would avoid routine medical appointments and between 13 and 21% of patients reported that they would change healthcare providers if they experienced stigmatizing care (e.g., insensitive weight-related language; Alberga et al., 2019). These findings emphasize the need for healthcare equipment that is appropriate for all body sizes as well as adjustment of medical practices to mitigate shame or embarrassment for patients with higher weight.

Suggestions for Improving Patient Care

In an attempt to address this stigmatizing care, researchers have explored ways to improve care in order to improve both patient outcomes and healthcare utilization (Seymour et al., 2018). First, patients report a desire to be treated similarly to other patients while also being viewed as an individual that is not defined by their weight (Williams, 2018). Consequently, patients do not want providers to comment on their weight constantly or only provide recommendations regarding their health behaviors aimed at weight reduction. Instead, patients with "obesity" want providers to explore their psychological well-being, including experiences of weight stigma (Palmeira et al., 2016; Sikorski et al., 2015; Williams, 2018). Finally, providers may benefit from supporting patients with accepting instead of rejecting their bodies, which may help break the cycle of weight stigma and weight gain (Tomiyama, 2014). Findings are mixed regarding the preference for providers to discuss weight in a direct versus sensitive

manner, which may vary based on patient communication preferences, experiences with weight stigma, and internalized weight bias (Koball et al., 2018). Overall, it appears that patients prefer an approach to care that is characterized by empathy, compassion, and lack of judgment.

Intervening at the Provider Level

Given the aforementioned literature, the negative impact of healthcare provider weight stigma on patient well-being and medical care has been well-established. Puhl and Heuer (2009) assert the need for intervention studies that address healthcare providers' weight stigma to improve patient care. As such, the current study aims to intervene at one source of the stigma – the provider level. By intervening at this level, we are aiming to improve the experiences of this marginalized population rather than placing the burden on patients with higher weight to cope without other levels of intervention. Taking into account the values of counseling psychology, it is essential to recognize that patients are not responsible for their experiences of stigma, and, therefore, should not have to bear the burden of creating change in the healthcare industry.

Researchers have already investigated ways to intervene at the provider level to address broader issues with patient care, such as improving compassionate care (Rao & Kemper, 2017) and mitigating provider burnout and secondary trauma (Hevezi, 2016). However, interventions specifically targeting weight-bias reduction are scarce despite the myriad of studies establishing the negative impact of weight bias on patient well-being (Puhl & Heuer, 2009). Of those interventions that have been explored, the emphasis has been on psychoeducation. For instance, Diedrichs and Barlow (2011) examined the utility of a psychoeducation intervention for 85 pre-service health providers (i.e., undergraduate

psychology students) aimed to reduce weight bias. The intervention included a one-time, two-hour lecture on "obesity," weight bias, and multiple contributing factors to weight, which aimed to specifically target beliefs about the controllability of weight. Additional topics covered in the lecture included body image and the prevalence and consequences of weight bias in the healthcare setting. Participants also were taught strategies for avoiding weight bias and promoting more affirmative care in health settings. Their findings demonstrated a small to moderate effect of the intervention on weight bias that remained three weeks post-intervention ($\eta_p^2 = 0.13$; Diedrichs & Barlow, 2011). The authors concluded that their intervention demonstrated some success in addressing weight bias in pre-service health students and suggested that future research explore how interventions address different facets of weight bias. Therefore, it appears that while psychoeducation-based interventions address one aspect of weight bias, other types of interventions are needed to address the complex, multi-faceted nature of this stigma (e.g., the associated cognitive and emotional processes).

While preliminary findings regarding the utility of weight bias reduction interventions are promising, there are several gaps in the current literature as well as several factors to consider when working with healthcare providers. First, the prevalence of weight bias in patient care still exists at alarming rates, and the majority of research has focused on the prevalence and implications of this bias rather than on ways to reduce bias (Puhl & Heuer, 2009). There also is a lack of literature exploring ways to address the cognitive and emotional factors contributing to weight bias, such as automatic and controlled processing as well as positive and negative emotions (Stell & Farsides, 2016). Preliminary research suggests that inducing empathy and promoting perspective taking

may be favorable methods to reduce weight bias given the use of these strategies to reduce other forms of bias (e.g., HIV-related bias in the LGBT+ community), although findings thus far have been mixed (Gloor & Puhl, 2016). Furthermore, the length of time required for these interventions is an important consideration given the paucity of time available to healthcare providers. As such, there is a need for a brief, effective intervention targeting the cognitive and emotional processes of bias that healthcare providers can utilize in a preventative manner before working with patients with higher weight.

Self-Compassion Interventions for Healthcare Providers

Within the past decade, researchers have turned their attention to a relatively new construct that builds on the idea of being compassionate towards others by encouraging a positive, affirmative, non-judgmental attitude towards oneself – self-compassion. Self-compassion is composed of three elements, including self-kindness (i.e., kindness towards ourselves, particularly when we fail), common humanity (i.e., recognition that suffering is a shared experience), and mindfulness (i.e., non-judgmentally observing our current emotional and cognitive state; Neff, 2003). Self-compassion interventions have been shown to be effective, brief interventions that improve psychological well-being for adults with and without meditation experience (Baer et al., 2012).

Furthermore, recent literature is starting to evince the efficacy of self-compassion interventions for improving interpersonal relationships, including between healthcare providers and their patients (e.g., Rao & Kemper, 2017). More specifically, Rao and Kemper (2017) examined the feasibility of three online trainings for improving health professionals' (e.g., nurses, social workers, and dietitians) gratitude, self-compassion, and

confidence in providing compassionate care. Participants were assigned to one of three one-hour, one-time online modules: (1) gratitude-focused meditation, (2) positive- or sacred-word focused meditation, or (3) loving kindness meditation. Each module included psychoeducation about the meditation, evidence supporting the utility of the meditation, information regarding other guided practices, strategies for incorporating meditations into daily practice, and pre- and post-measures. Results indicated that the self-compassion intervention (i.e., the loving kindness meditation) significantly improved health professionals' self-compassion and confidence in providing compassionate care to patients (Rao & Kemper, 2017). Self-compassion interventions, therefore, may be a viable route for addressing weight bias-related concerns in the patient-provider relationship and improving compassionate care for patients.

Loving Kindness Meditation

While several self-compassion interventions exist, including guided meditations and self-guided exercises, one empirically supported intervention that has promise for improving the patient-provider relationship is the loving kindness meditation (LKM). The LKM is a self-compassion intervention that specifically guides listeners to send love, kindness, and compassion towards the self and others. Compared to other self-compassion interventions, LKM not only cultivates self-compassion within oneself, but also encourages one to share compassion with others. As such, prior research suggests the utility of LKM for improving psychological well-being (e.g., Galante et al., 2016; Weibel et al., 2017).

To examine the utility of LKM, Galante and colleagues (2016) conducted an internet-based randomized control trial to determine if LKM improves well-being

through pleasant emotions, psychological resources, and altruism compared to a control condition (i.e., light exercise course). Participants included 146 adults from the United Kingdom and the United States who primarily identified as women (80%) and White (89%), with a median age of 34 years (range 18-79 years). Approximately half of participants endorsed having previous meditation experience. Participants were randomized into one of two conditions, both of which included a four-week course of daily videos with exercises for participants to complete. Each of the 20 videos lasted for 10 minutes. Following the exercises, participants were asked to journal about their experiences and interact with other participants on an online forum. Results indicated that LKM improved well-being through pleasant emotions, psychological resources, and altruism. Consequently, participants endorsed significantly less anxiety ($\beta = -0.43$) and depression ($\beta = -0.25$) and significantly improved satisfaction with life ($\beta = 1.92$), well-being ($\beta = 2.02$), and positive affect ($\beta = 0.76$; Galante et al., 2016). The authors concluded that these findings suggest the utility of LKM for improving well-being.

Additionally, Weibel and colleagues (2017) specifically examined the efficacy of LKM for reducing anxiety by randomizing participants to either a group based LKM intervention or a waitlist control group. Participants included 71 undergraduate students, with the majority identifying as women (77%) and White (78%), with a mean age of 19.1 years (*SD* = 1.17). The LKM intervention consisted of four, weekly, 90-minute sessions with 10 to 14 participants per group. One facilitator led the group using a manual created by the authors and guided participants through psychoeducation, meditation, and group discussion. Pre- and post-treatment surveys were completed for anxiety, compassionate love, and self-compassion. While results did not indicate a statistically significant

differences in anxiety between the LKM intervention and control groups, results indicated statistically significant differences in compassionate love and self-compassion. The authors hypothesized that the focus on positive affect within LKM was not as amenable to anxiety since low levels of positive affect are not typically associated with anxious symptomatology. However, their findings supported the notion that LKM is an effective means for improving self-compassion and compassion for others (Weibel et al., 2017).

Importantly, the format and duration of LKM interventions varies greatly by study, including individual and group meditations lasting anywhere from one, ten-minute session (e.g., Stell & Farsides, 2016) to eight, two-hour sessions (e.g., Condon et al., 2013). Therefore, this intervention appears to be effective in a variety of formats and durations. However, when considering the application of LKM to healthcare providers, briefer formats of the LKM will likely be more feasible for implementation.

Since provider stress increases burnout and decreases quality of patient care, prior research has demonstrated that both compassion and positive affect improve overall provider well-being (Lamothe et al., 2014), quality of patient care, and the patient-provider relationship (Lown et al., 2011). Consequently, some researchers have explored the use of the LKM together with other mindfulness-based meditations for improving provider well-being and patient-provider interactions. For instance, Hevezi (2016) examined the feasibility of structured meditations for reducing compassion fatigue and burnout and improving compassion satisfaction for 15 oncology nurses. Participants were asked to practice a recorded meditation that consisted of a 4-minute, mindful breathing technique for stress reduction, an 8-minute breathing meditation for relaxation, and a 4-

minute LKM for increasing self-compassion. Participants were instructed to practice the three meditations for five days per week across four weeks. Results indicated statistically significant improvements in compassion satisfaction (d = 0.63), and statistically significant reductions in burnout (d = 0.92) and secondary trauma (d = 0.56; Hevezi, 2016). Despite the small sample size and lack of a control group, findings suggest that mindfulness-based interventions including self-compassion components may be a feasible intervention for improving nurses' well-being and, therefore, the quality of their care for patients.

Furthermore, preliminary research suggests that the LKM alone may be an efficacious intervention for improving positive emotions in healthcare providers. Rao and Kemper (2017) explored the impact of LKM compared to a gratitude-focused meditation and a positive- or sacred-word meditation on healthcare professionals' well-being and compassion towards patients. Together with psychoeducation and empirical support for each technique, meditations were delivered via a single-session, one-hour module to various healthcare professionals, including nurses, physicians, social workers, dietitians, and psychologists. The LKM, in particular, yielded statistically significant increases in self-compassion and confidence in providing compassionate care for patients. The authors did not explore the role of mediators to determine the mechanisms by which LKM resulted in these improvements. Consequently, the authors hypothesized that by improving the well-being of providers through increased positive affect, the quality of patient care should also improve (Rao & Kemper, 2017).

Similarly, Seppala and colleagues (2014) examined the utility of a brief LKM intervention for increasing compassion and positive affect in undergraduate students to

address issues related to provider well-being and quality of patient care. Participants were randomly assigned to either LKM, positive-affect exercise, or an affect-neutral visualization exercise. The duration of each condition was one, 10-minute exercise. Compared to the positive-affect and visualization exercises, LKM demonstrated a statistically significant improvement for other-focused positive affect (i.e., sense of connection to pictures of strangers; $\eta_p^2 = 0.07$) and social connectedness ($\eta_p^2 = 0.05$), and a statistically significant decrease in self-focus ($\eta_p^2 = 0.07$; Seppala et al., 2014). Therefore, the authors asserted that the LKM appears to be a potentially "viable, practical, and time-effective solution for…improving quality of care in patients" (Seppala et al., 2014, p. 1). Because participants in the current study consisted of undergraduate students, it is important to replicate these findings with those who are either pursuing or currently in the healthcare industry.

Reducing Bias Using the Loving Kindness Meditation

Although LKM has been established as an efficacious intervention for improving overall provider well-being and patient quality of care, there is a lack of literature exploring the utility of this intervention as it pertains to weight bias. While psychoeducational interventions have been explored for reducing weight bias, evidence suggests that these interventions alone are not enough given the role of cognitive and emotional mechanisms like empathy in weight bias (Gloor & Puhl, 2016). As such, there is a need for an intervention that addresses these mechanisms. Prior research has indicated the utility of LKM for reducing implicit racial bias (e.g., Kang et al., 2014) through mechanisms such as increased positive, other-focused emotions and controlled processing and decreased automatic processing (Stell & Farsides, 2016). The prosocial

nature of LKM that elicits a sense of connection to others further suggests the potential utility of this intervention for reducing weight bias. Consequently, it is important to understand the ways in which LKM, in particular, could potentially help mitigate weight bias.

Affective States, Cognitive Processing, Cognitive Flexibility, and Bias

Before examining the utility of interventions for reducing bias, it is important to consider the various factors related to implicit bias. Prior literature has indicated that positive emotions, such as happiness, can actually increase our reliance on implicit biases (Griskevicius et al., 2010). People in positive affective states generally tend to utilize more simplistic, automatic processing (e.g., heuristic), which decreases the critical examination of information or ideas and increases the use of stereotypes or judgments. Negative emotions, on the other hand, have been found to elicit deep, controlled processing (e.g., systematic), which results in a decreased likelihood of using stereotypes and judgments and increased likelihood of critical examination of information or ideas (Griskevicius et al., 2010). As such, it was previously hypothesized that individuals in a positive affective state would be at greater risk for demonstrating bias compared to those in negative affective states.

However, Griskevicius and colleagues (2010) demonstrated that the relationship between affective states and bias may not be as simple as previously hypothesized. Using an evolutionary perspective of the practical functionality of emotions, researchers postulated that different emotions activate different types of processing, regardless if they are positive or negative in nature. As such, it was found that certain positive emotions, including awe and nurturant love, do not facilitate automatic processing, but instead

utilize systematic processing. Anticipatory enthusiasm, amusement, and attachment love, on the other hand, were found to facilitate automatic, heuristic processing (Griskevicius et al., 2010). The impact of emotions on processing, therefore, appears to not only be related to the valence of the emotions.

Because controlled processing (i.e., deep processing involving scrutinization of incoming information) is associated with critical thinking, careful examination of information, and reduction in implicit biases (Griskevicius et al., 2010), it is important to consider the avenues through which to increase this type of processing. Cognitive flexibility, or the ability to react flexibly to unexpected situations or changing environments, has been found to decrease the use of automatic processing and increase controlled processing (Moore & Malinowski, 2009) and emotional regulation (Schanche et al., 2019), suggesting its potential utility for reducing implicit bias. Research has demonstrated that long-term mindfulness and meditation practices, in particular, increase cognitive flexibility (e.g., Moore & Malinowski, 2009; Fabio & Towey, 2018; Schanche et al., 2019), although findings are mixed regarding the impact of short-term mindfulness practices on cognitive flexibility (Lao et al., 2016).

Moore and Malinowski (2009) conducted a study exploring the relationship between meditation, mindfulness, and cognitive flexibility with 25 Buddhist meditators and 25 non-meditators. Participants included approximately half men and half women (48% and 52%, respectively) with a mean age of 27.75 years (range: 20-40 years). The intervention group (i.e., 25 Buddhist meditators) was recruited from a Buddhist center where participants had completed at least a 6-week beginners' course on meditation. The control group (i.e., 25 non-meditators) was recruited from a credit management company

and included professionals such as information technology technicians, account managers, and marketing executives. Both groups completed self-report measures for mindfulness as well as tasks assessing cognitive flexibility and attentional performance. Results indicated that mindfulness and meditation practices were positively related to cognitive flexibility. Furthermore, mediation analyses indicated that mindfulness, particularly acting with awareness and observing, was predictive of cognitive flexibility (Moore & Malinowski, 2009). As such, the authors concluded that mindfulness may be an effective method for increasing cognitive flexibility.

Furthermore, preliminary evidence suggests a positive relationship between self-compassion and cognitive flexibility (Shahabi et al., 2019). In a study conducted by Shahabi and colleagues (2019), descriptive correlational analyses were utilized to explore the relationship between self-compassion, cognitive flexibility, and marital compatibility in parents of children with Autism Spectrum Disorder (ASD). Participants included 100 married couples who were recruited through an autism center and ranged from 20 and 40 years in age. Results indicated a positive, statistically significant relationship between self-compassion and cognitive flexibility (r = 0.39; Shahabi et al., 2019). The authors concluded that a self-compassionate approach to parenting children with ASD could support them with developing more adaptive cognitive processes (i.e., cognitive flexibility) that would result in improved marital compatibility. Therefore, it appears that self-compassion interventions may be an efficacious method for improving cognitive flexibility.

Research has not yet directly explored the relationship between cognitive flexibility and implicit bias. However, cognitive flexibility has been found to be

associated with increased controlled processing and decreased automatic processing (Moore & Malinowski), which have been associated with decreased implicit bias (Stell & Farsides, 2016). Therefore, cognitive flexibility is a potential avenue to explore regarding the mitigation of implicit bias. Furthermore, several studies have demonstrated that meditation and mindfulness practices have been found to increase cognitive flexibility (e.g., Schanche et al., 2019). As such, mindfulness and meditation practices may be an important method for increasing specific, positive, other-focused emotions and cognitive flexibility in order to decrease implicit bias.

LKM and Racial Bias

LKM has been found to increase prosocial, cooperative behavior and positive affect, and encourages the application of these thoughts and behaviors towards both acquaintances as well as strangers. While LKM has not yet been utilized to address weight bias, preliminary evidence suggests the feasibility of this intervention for decreasing implicit racial bias (Stell & Farsides, 2016). Based on prior literature regarding the processes involved in implicit bias, Stell and Farsides (2016) examined the ways in which positive emotions, automatic processing, and controlled processing facilitate and mitigate racial bias. Participants included 69 White, undergraduate students with a mean age of 23.7 years (SD = 4.24), and the majority identified as women (72%). Participants were randomly assigned to either a 7-minute LKM or visualization condition.

In the LKM condition, participants listened to a pre-recorded meditation that first prompted them to imagine people who deeply cared for them. They were then prompted to open their eyes and look at a photograph of a Black person and direct feelings of love and wishes of health, happiness, and well-being towards this person. Following the

intervention, implicit bias was measured using the race Implicit Association Task (IAT) and positive, other-regarding emotions were measured using the modified Differential Emotions Sub-scale (mDES; Fredrickson et al., 2003). Results indicated that LKM effectively reduced racial bias (d = 0.59) through the mediation of automatic processing (d = 0.58), controlled processing (d = 0.62), and positive, other-regarding emotions (d = 1.67; Stell & Farsides, 2016). As such, it appears that the meditative qualities and affective, other-focused nature of the LKM are an effective mechanism for reducing automatic processing and increasing cognitive processing, therefore reducing implicit bias. Therefore, LKM may be an effective intervention for other forms of implicit bias, such as weight bias, in healthcare providers.

Addressing Weight Stigma in Nursing Students

Nurses make up the largest proportion of healthcare providers in the United States, with 3.8 million registered nurses and 200,000 more positions created each year (American Association of Colleges of Nursing, 2019). Nurses do not work in "assistant" type roles, but instead practice independently and work directly with patients. Furthermore, nurses provide primary and preventative care to patients across a variety of settings, including but not limited to, primary care clinics, hospitals, nursing homes, and schools (American Association of Colleges of Nursing, 2019). Therefore, when considering patient care and contact with healthcare providers, it is essential to explore the role of nurses.

With regard to caring for patients with higher weight, nurses play an active role in "obesity" prevention and management, including promoting lifestyle changes (e.g., diet and exercise) and facilitating weight management programs (Lazarou & Kouta, 2010). As

such, nurses are at the forefront patient care for patients with higher weight and may have more direct contact with patients compared to other healthcare providers. Consistent with the literature on weight bias in healthcare providers broadly, nurses also endorse these biases (Garcia, 2016) as well as similar contributing factors (e.g., beliefs about the controllability of weight; Tanneberger et al., 2018). In a study exploring the prevalence, causes, and consequences of weight bias in rural nurses, qualitative results revealed that nurses endorsed negative perceptions of patients with "obesity," including being lazy, demanding, less intelligent, and less hygienic. Consequently, nurses reported providing differential care to patients with "obesity," including delayed treatment (e.g., waiting extended periods of time to move a patient) and lack of appropriate medical equipment (e.g., bariatric beds; Garcia, 2016). Therefore, there is a need for addressing weight bias in nurses in order to improve care for patients with higher weight.

Within this field, students who are in the process of pursuing their career in nursing are of particular interest for weight bias interventions. Prior research has established the pervasiveness of weight stigma not only in currently practicing healthcare providers, but also in student populations (e.g., Blanton et al., 2016). Therefore, consistent with the values of the field of counseling psychology, it is necessary to prevent stigmatizing care for patients in the future by combating the oppressive systems that are currently in existence (Nadal, 2017). By addressing stigma earlier in a nurses' education, we aim to reduce weight bias and promote affirmative care prior to students working with these patients. We are, therefore, decreasing the likelihood that patients are exposed to weight bias from healthcare providers, which should consequently improve their overall well-being and medical care.

Current Study

The current study aimed to address the need for preventative interventions that increase compassionate, empathic care for patients with higher weight by reducing weight bias in nursing students. Due to the limited time healthcare providers have within their schedules, there is a need for a brief, easy-to-implement intervention (Seppala et al., 2014) that goes beyond psychoeducation and targets the mechanisms that contribute to weight bias (Stell & Farsides, 2016). Furthermore, the current study aimed to contribute to the literature on LKM by identifying potential mechanisms by which LKM yields change in weight stigma on an interpersonal (rather than intrapersonal) level. Therefore, we aimed to explore the LKM as a brief intervention that reduces bias by increasing self-compassion, positive, other-focused emotions, and cognitive flexibility in order to improve empathic, compassionate, affirmative care for patients with higher weight.

Hypotheses

Hypothesis 1: Participants who complete the LKM will demonstrate significantly higher self-compassion compared to participants in the meditation control condition.

> LKM has been found to result in statistically significant increases in self-compassion for healthcare professionals (Rao & Kemper, 2017). Additionally, prior research indicates that LKM results in greater improvements in self-compassion when compared to a waitlist control condition for oncology nurses (d = 0.45; Weibel et al., 2017).

Hypothesis 2: Participants who complete the LKM will demonstrate significantly higher compassionate care compared to participants in the meditation control condition.

Rao and Kemper (2017) conducted a study exploring the efficacy of LKM compared to a gratitude-focused meditation and a positive- or sacred-word meditation for healthcare professionals. Results indicated that participants in the LKM condition demonstrated statistically significant increases in compassionate care (Rao & Kemper, 2017).

Hypothesis 3: Participants who complete the LKM will demonstrate significantly lower weight bias compared to participants in the meditation control condition.

The relationship between LKM and weight bias has not yet been explored. However, the utility of the LKM for reducing racial bias has been examined (Stell & Farsides, 2016). Results indicated statistically significant decreases in racial bias in the LKM condition compared to the control condition (d = .59; Stell & Farsides, 2016).

Hypothesis 4: Participants who complete the LKM will demonstrate significantly higher positive emotions compared to participants in the meditation control condition.

Prior research has demonstrated the utility of the LKM for increasing positive emotions. Zeng et al. (2015) conducted a meta-analysis exploring the effect of the LKM on positive emotions, and results indicated medium effect sizes. Furthermore, Seppala and colleagues (2014) found that the LKM demonstrated a statistically significant improvement for other-focused positive affect and social connectedness, and a statistically significant decrease in self-focus (Seppala et al., 2014).

Hypothesis 5: Participants who complete the LKM will demonstrate significantly higher cognitive flexibility compared to participants in the meditation control condition.

Prior research has demonstrated that long-term mindfulness and meditation practices, in particular, increase cognitive flexibility (e.g., Moore & Malinowski, 2009; Fabio & Towey, 2018; Schanche et al., 2019). For instance, Moore and Malinowski (2009) conducted a study with 25 Buddhist meditators with at least six weeks of meditation experience and 25 non-meditators. Results indicated that mindfulness and meditation practices were positively related to cognitive flexibility. Notably, findings are mixed regarding the impact of short-term mindfulness practices (i.e., 8-weeks or less) on cognitive flexibility (Lao et al., 2016).

Hypothesis 6: There will be a significant, inverse correlation between self-compassion and weight bias for participants in the LKM condition.

While the relationship between self-compassion and weight bias has not yet been explored, we expect for there to be an inverse correlation between these variables given that LKM has been shown to increase self-compassion (e.g., Weibel et al., 2017) as well as decrease racial bias (d = 0.59; Stell & Farsides, 2016). Therefore, it is hypothesized that there will be a statistically significant, inverse correlation between these variables for participants in the LKM condition.

Hypothesis 7: The relationship between LKM and weight bias will be mediated by cognitive flexibility, such that the meditation will yield increases in cognitive flexibility and, consequently, decreases in weight bias.

Prior research has demonstrated that cognitive flexibility is related to shifts in cognitive processing that are associated with decreased implicit bias (i.e., decreased automatic processing and increased controlled processing; Moore &

Malinowski, 2009). Furthermore, mindfulness has been found to be predictive of increases in cognitive flexibility (Moore & Malinowski, 2009). LKM, in particular, has been found to reduce racial bias through the mediation of automatic processing (d = 0.58; Stell & Farsides, 2016), suggesting the potential utility of LKM for increasing cognitive flexibility and, therefore, decreasing weight bias.

Hypothesis 8: The relationship between LKM and weight bias will be mediated by positive, other-focused emotions, such that the meditation will yield increases in positive, other-focused emotions and, consequently, decreases in weight bias.

LKM has been found to result in statistically significant improvements in other-focused positive affect (η_p^2 = 0.07; Seppala et al., 2014). Furthermore, prior research indicates that LKM reduces racial bias through the mediation of positive, other-focused emotions (d = 1.67; Stell & Farsides, 2016), suggesting the potential utility of LKM for increasing positive, other-focused emotions and, therefore, decreasing weight bias.

Hypothesis 9: The relationship between LKM and weight bias will be mediated by self-compassion, such that the meditation will yield increases in self-compassion and, consequently, decreases in weight bias.

The mediating role of self-compassion between LKM and implicit bias has not yet been examined, but we expect that this mediation will exist given prior literature indicating that LKM increases self-compassion (e.g., Weibel et al., 2017) as well as decreases racial bias (d = 0.59; Stell & Farsides, 2016). Furthermore, LKM is a self-compassion intervention prompting participants to send loving kindness

phrases to both the self and others. As such, we expect that self-compassion will mediate the relationship between LKM and weight bias.

Chapter Two: Method

Participants

Participant Recruitment and Inclusion Criteria

Participants were recruited through the National Student Nurses' Association, Inc. (NSNA) listserv. This NSNA is a national non-profit organization with over 60,000 pre-RN (registered nurse) students enrolled in associate, baccalaureate, diploma, and generic nursing programs. To be included in the current study, participants must have been at least 18 years old, proficient in reading, listening, and writing English, enrolled part-time or full-time in a nursing training program, and have access to a desktop or laptop computer with audio and/or speakers.

Following approval from the NSNA President, a brief description of the study, inclusion criteria, risks and benefits, compensation, secure survey link, and contact information were sent via email to the listserv (see Appendix E). Participants who completed the survey were entered in a raffle to win one of 10 $15 Amazon gift cards. After clicking the survey link, participants were directed to the Qualtrics survey. The home page included the informed consent and an option for participants to provide consent to proceed with the study (see Appendix F). If participants provided consent, they were directed to the demographic questionnaire.

Benefits, Risks, and Ethical Considerations

Benefits of the current study included an opportunity to engage in a guided meditation that has proven to yield positive psychological outcomes (e.g., Baer et al., 2012) and reflect about aspects of care for oneself and others. Risks of the current study included potential discomfort related to the implicit association task and questions about one's attitudes towards people with "obesity" and their ability to provide compassionate care to patients. Participant data was deidentified and stored securely per Institutional Review Board (IRB) regulations.

Power Analysis

A power analysis was conducted using G*Power software (Erdfelder et al., 1996) to determine the required number of participants for the current study. Per power analysis guidelines in the field (Heppner et al., 2016), an alpha of 0.05 and power of 0.80 were utilized. First, we calculated an a priori one-way ANOVA analysis to determine the number of participants required to detect an effect of the intervention using a one-way ANOVA. Using the aforementioned power analysis guidelines and a medium effect size of 0.25, we calculated that at least 128 participants were needed for the current study. Furthermore, we also utilized an a priori linear bivariate regression analysis given the proposed mediation model. We estimated the smallest standardized slope that would be significant for each slope in the model as 0.18. Based on this analysis, 237 participants were needed for this analysis. Therefore, we aimed to recruit at least 128 participants, ideally aiming for 237 participants.

Meditations

Both meditations began with an introduction for participants to sit comfortably, close their eyes, relax, and take several deep breaths prior to beginning the loving kindness or mindfulness meditation.

Loving Kindness Meditation

LKM consisted of a 10-minute guided meditation recorded by the author (see Appendix B). The script for LKM was adapted from Kristin Neff's Loving Kindness Meditation (2020) and adjusted to match the methodology of Stell and Farsides (2016). Participants were directed to repeat loving kindness phrases (e.g., "May you have health," "May you be happy," "May you be well.") to themselves, someone they care deeply for, and someone they have neutral feelings towards. Similar to Stell and Farsides (2016), in the final round of loving kindness phrases participants were instructed to open their eyes. They were presented with a photograph of a woman with higher weight and then prompted to direct loving kindness phrases to this person (e.g., health, happiness, wellness).

Mindfulness Meditation

Instead of having a complete control group, a mindfulness meditation was used to specifically explore the utility of the compassion component of the LKM for reducing weight bias. Compared to other mindfulness interventions that focus on being present, aware, and non-judgmental, the LKM also prompts participants to direct compassion towards themselves and others. Therefore, by utilizing a mindfulness intervention as the control condition, we aimed to determine if the compassionate aspects of the LKM were responsible for decreased weight bias rather than mindfulness generally.

The mindfulness meditation consisted of a 10-minute body scan guided meditation recorded by the author (see Appendix B). The script for the body scan meditation was adapted from an online audio-recording (Yvonne, 2016). Participants were directed to scan their body, starting at their toes and moving to the crown of their head. They were directed to notice specific parts of their body as they sit in a chair. To keep this condition as similar as possible to the intervention condition, participants were instructed to open their eyes at the end of the body scan meditation. They were presented with a photograph of a woman with higher weight and then prompted to pay attention to the physical features of the woman's face.

Measures

All demographic questions can be found in Appendix C and measures in Appendix D.

Demographic Variables

After providing consent for the study, participants were asked various demographic questions including their age, racial/ethnic identity, gender identity, sexual orientation, highest level of education completed, current degree program, year in the program, enrollment status, approximate number of hours of clinical experience, intention for pursuing a career in a nursing specialty area, body size, and previous meditation experience. To avoid further stigmatization regarding body size, this question did not ask for self-reported height and weight to calculate BMI. Instead, participants were asked their typical clothing size, which is similar to the methodology of Williams (2018), as well as their preferred body size description.

Attitudes Towards "Obesity"

Participants' positive attitudes towards people with "obesity" were assessed using the Attitudes Toward Obese Persons scale (ATOP; Allison et al., 1991). The scale included 20 items assessing the degree to which participants agree with statements about people with "obesity" using a six-point Likert scale (e.g., "Obese people are often less aggressive than nonobese people." and "Obese people should not expect to lead normal lives."). Furthermore, prior research has demonstrated the three-factor structure of the scale including Different Personality (i.e., perception that people with "obesity" have negative or different personality characteristics or inferior abilities; "Obese people are more emotional than nonobese people."), Social Difficulties (i.e., perception that people with "obesity" have or create social problems; "Most people feel uncomfortable when they associate with obese people."), and Self-Esteem (i.e., how people with "obesity" perceive or view themselves; "Most obese people feel that they are not as good as other people."). Total scores were calculated, and higher scores reflected positive attitudes towards people with "obesity."

The scale was originally validated using three different populations including 1,278 members of National Association to Advance Fat Acceptance (NAAFA), 72 undergraduate students, and 52 graduate students in psychology. The scores for the ATOP demonstrated excellent internal consistency ($\alpha = 0.81$ for graduate students, 0.80 for undergraduate students, and 0.84 for the NAAFA sample) and construct and discriminant validity (Allison et al., 1991). More specifically, the ATOP demonstrated discriminant validity from the Beliefs About Obese Persons scale (BAOP) due to the intercorrelations between the scales being significant but less than the internal

consistencies. Results also indicated that participants held more positive attitudes towards people with "obesity" when they believed that "obesity" was outside of the control of the individual, providing evidence for construct validity (Allison et al., 1991).

Weight Bias

Participants' weight bias was assessed using the weight Implicit Association Test (IAT; Greenwald et al., 1998). Broadly, the IAT measures the strength of relationships between concepts and evaluations or stereotypes (Project Implicit, 2011). Participants were first asked to sort images of people with lower weight and people with higher weight based on the associated categories (i.e., fat people, thin people). They were then asked to sort positively and negatively valenced words (e.g., athletic, clumsy) based on the associated categories (i.e., good, bad). Finally, the first two conditions were combined so that participants must sort images and positively and negatively valenced words based on the combined categories (e.g., fat people/good, thin people/bad). Participants were presented with blocks of stimuli using both pairings of the categories. For instance, a participant who first sorted stimuli using the "fat people/good" and "thin people/bad" categories were then asked to sort stimuli using the "fat people/bad" and "thin people/good" categories. The IAT also switched the placement of the categories since they appeared on the left and right sides of the screen. Overall, the IAT is based on the assumption that sorting is easier when participants are doing so in a manner that is consistent with their implicit mental associations. It should require more time for participants to override their mental associations in other conditions, resulting in a delayed reaction time (i.e., greater bias). Furthermore, error penalties (e.g., adding an

additional 600 milliseconds) were incorporated when participants incorrectly sort stimuli (Carpenter et al., 2019).

Raw data was inputted into the iatgen software to calculate a *D*-score for each participant to represent their level of weight bias. A *D*-score of zero indicated no bias, a positive *D*-score indicated preference for people with lower weight, and a negative *D*-score indicated preference for people with higher weight (Carpenter et al., 2019). The IAT was validated for seven different attitude-object pairings, including the weight IAT stimuli, using 287 undergraduate students from Yale University. Scores on the IAT demonstrated adequate internal consistency ($\alpha = 0.81$) as well as convergent and discriminant validity (Nosek & Smyth, 2007). Nosek and Smyth (2007) found evidence for convergent validity by comparing participants' IAT scores to their self-reported attitudes towards each attitude-object pairing, including for the weight IAT. Discriminant validity was demonstrated between the different attitude domains as well as between explicit and implicit attitude constructs. Using confirmatory factor analysis, results indicated that the model fit improved when a factor was specified for each attitude domain compared to when all attitude domains were included as a single factor. Furthermore, when the authors adjusted the model to include the correlation between explicit and implicit attitude factors (rather than including them as one attitude domain factor), the model fit again improved, providing further evidence for discriminant validity (Nosek & Smyth, 2007).

Additionally, prior research suggests the potential utility of using the weight IAT for assessing weight bias in nursing populations (Manns-James, 2015). More specifically, strengths of the IAT include the ability to circumvent social desirability bias as well as

measure attitudes and behaviors for which nurses lack awareness. As such, the IAT provides a platform to understand nurses' implicit attitudes that can impact patient care and outcomes (Manns-James, 2015).

Self-Compassion

Self-compassion was assessed using the Self-Compassion Scale – Short Form (SCS-SF; Raes et al., 2011). The SCS-SF consists of 12 items rated on a five-point Likert scale that assess an individual's sense of common humanity (e.g., "I try to see my failings as part of the human condition."), mindfulness (e.g., "When something painful happens I try to take a balanced view of the situation."), and self-kindness (e.g., "I try to be understanding and patient towards those aspects of my personality I don't like."). Higher total mean scores on the SCS-SF indicate higher levels of self-compassion.

Scores on the SCS-SF have demonstrated adequate internal consistently ($\alpha \geq .86$) when looking at total scores across all samples, but they show less consistent reliability when examining subscale scores (Raes et al., 2011). Furthermore, the SCS-SF is strongly correlated with the full Self-Compassion Scale ($r \geq 0.97$), which has demonstrated predictive validity for well-being, convergent validity with a single-item measure of self-compassion, discriminant validity with social desirability and self-criticism, and construct validity for perceived competence, fear of failure, and body appreciation (Neff, 2016; Neff & Tóth-Király, in press). Additionally, the SCS-SF has demonstrated the same factor structure as the original full Self-Compassion Scale, including self-compassion as a higher order and six second-order factors (i.e., self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification; Raes et al., 2011). The SCS-SF has demonstrated construct validity as evidenced by negative correlations with depression

as measured by the Beck Depression Inventory-II (BDI-II), anxiety as measured by the State-Trait Anxiety Inventory (STAI), and perceived stress, as measured by the Perceived Stress Questionnaire (PSQ), as well as positive correlations with mindfulness as measured by the Mindful Awareness Attention Scale (MAAS; Garcia-Campayo et al., 2014).

Cognitive Flexibility

The Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010) was used to assess participants' cognitive flexibility. The CFI consists of 20 items rated on a seven-point Likert scale to measure three components of cognitive flexibility: "(1) the tendency to perceive difficult situations as controllable, (2) the ability to perceive multiple alternative explanations for life occurrences and human behavior, and (3) the ability to generate multiple alternative solutions to difficult situations" (Dennis & Vanderwal, 2010; p. 241). Validation studies revealed a two-factor structure, including the Alternatives and Control subscales. The Control subscale measures the first aspect of cognitive flexibility (i.e., perceiving situations as controllable; "I often look at situations from different viewpoints.") and the Alternatives subscale measures the latter two aspects of cognitive flexibility (i.e., ability to both perceive and generate multiple explanations for difficult situations; "I consider multiple options before making a decision."). Lower total scores on the CFI as well as the Alternatives and Control subscales are indicative of greater cognitive rigidity whereas higher scores are indicative of greater cognitive flexibility.

The CFI has been utilized in prior research examining the relationship between mindfulness meditations and cognitive flexibility (e.g., Cohen et al., 2017). Scores on the

CFI have demonstrated strong internal consistency (α = 0.90-0.91) and high seven-week test-retest reliability (r = 0.81) as well as convergent, construct, and concurrent validity in an undergraduate population from a Midwestern university. The CFI has been found to strongly correlate with the Cognitive Flexibility Scale (i.e., convergent validity) and the Ways of Coping Checklist-Revised (i.e., construct validity), which is a scale measuring the cognitive (e.g., blaming the self) and behavioral (e.g., asking a professional for help) strategies people utilize in stressful situations. It has also demonstrated significant inverse correlations with depression as measured by the Beck Depression Inventory-II (Dennis & Vander Wal, 2009).

Furthermore, scores on both the Alternatives and Control subscales have demonstrated strong internal consistency (α = .91, α = .84-.86, respectively) and high seven-week test-retest reliability (r = .75, r = .77, respectively), as well as convergent validity. In the original validation study, the Alternatives subscale was significantly, positively correlated with problem-focused coping, seeking social support, and focusing on the positive, and significantly, negatively correlated with detachment and keeping to the self. The Control subscale was significantly, positively correlated with problem-focused coping and focusing on the positive, and significantly, negatively correlated with detachment, and keeping to the self (Dennis & Vanderwal, 2010).

Positive Emotions

The Modified Differential Emotions Scale (mDES; Fredrickson et al., 2003) was used to assess levels of positive emotions. The Positive Emotions subscale was utilized for the current study, and scores for this subscale have demonstrated adequate internal consistency (α = 0.79; Fredrickson et al., 2003). Additionally, prior research indicates

that the positive emotions subscale negatively correlates with stress, anxiety, and depression and positively correlates with life satisfaction, psychological resilience, optimism, inspiration, hope, and subjective happiness, providing evidence for criterion validity. All items in the positive emotions subscale have been found to be positively, significantly correlated, indicating construct validity (Galanakis et al., 2016).

Per the methodology used in previous research exploring the role of LKM in reducing racial bias (Stell & Farsides, 2016), the directions for the scale were modified to direct participants to focus on their emotional experience during the meditation (i.e., "During the meditation exercise, I felt [positive emotion]."). Participants indicated their agreement with each statement on a five-point Likert scale. The Positive Emotions subscale was separated into positive, other-regarding and positive, non-other-regarding emotions per the methodology of Stell and Farsides (2016). Positive, other-regarding emotions include gratitude, elevation, love, and awe, and scores on these items have demonstrated adequate internal consistency ($\alpha = 0.92$). Positive, non-other-regarding emotions include amusement, buoyancy, hope, curiosity, happiness, pride, and contentment, and scores on these items have also demonstrated adequate internal consistency ($\alpha = 0.85$; Stell & Farsides, 2016). Stell and Farsides (2016) ascertained these two categories of positive emotions using existing literature on affective theory (e.g., Haidt, 2003; Horberg et al., 2011). Total scores were calculated for both positive, other-regarding and positive, non-other-regarding emotions. Higher total scores were indicative of greater positive emotionality during the meditations.

Compassionate Care

Compassionate care was measured using the Compassion Competence Scale (CCS; Lee & Seomun, 2016). The CCS consists of 17 questions for which participants indicated their level of agreement using a five-point Likert scale (e.g., "I am careful in my speech and behaviors so as to avoid hurting my patient's feelings."). The scale was validated on 660 nurses working in South Korea. The scale has demonstrated face validity, content validity, and convergent validity, and scores on the scale have demonstrated adequate internal consistency ($\alpha = 0.91$), and adequate two-week test-retest reliability ($r = 0.80$). Face and content validity were established by 10 experts in nursing (i.e., three nursing management professors, four administrators who managed nursing staff, and three nurses with more than 10 years of experience in hospitals). Scores on the CCS were found to be significantly correlated with the Emotional Competence Scale (i.e., a measure of emotional competence), Compassionate Love Scale (i.e., a measure of compassion), and Interpersonal Reactivity Index (i.e., a measure of dispositional empathy), providing evidence for convergent validity (Lee & Seomun, 2016). An exploratory factor analysis was also conducted, and items loaded onto three factors (i.e., communication, sensitivity, and insight). Internal consistency for the three subscales was also acceptable ($\alpha = 0.73$-0.88; Lee & Seomun, 2016). Higher average scores on the CCS indicate higher levels of compassionate care.

Internalization of the Thin Ideal

Internalization of the thin ideal was measured using the Thin/Low Body Fat subscale of the Sociocultural Attitudes Towards Appearance Questionnaire – 4 (SATAQ-4; Schaefer et al., 2015). The SATAQ-4 is intended to measure the sociocultural factors

that influence appearance ideals. Validation studies revealed a five-factor structure, including the Thin/Low Body Fat, Muscular/Athletic, Family Pressures, Peer Pressures, and Media Pressures subscales. The Thin/Low Body Fat subscale of the SATAQ-4 consists of five items for which participants indicate their level of agreement using a five-point Likert scale (e.g., "I want my body to look very thin."). The scale was validated using four United States (N = 1,952) and three international samples of women (N = 362) as well as a sample of men from the United States (N = 271). Scores for the Thin/Low Body Fat subscale have demonstrated adequate internal consistency (α = 0.87). The SATAQ-4 and its subscales have been shown to be positively associated with eating disorder symptomatology and negatively associated with body satisfaction and global self-esteem, providing evidence for convergent validity. Furthermore, construct validity was demonstrated by statistically significant differences on all subscales between healthy participants and participants with eating disturbances (Schaefer et al., 2015). Higher total scores on the Thin/Low Body Fat subscale indicate higher levels of internalization of the thin ideal (i.e., a thin figure with little body fat).

Procedure

After participants clicked on the Qualtrics survey link, they were directed to the informed consent page that included information about the purpose of the study, inclusion criteria, potential benefits and risks for participating in the study, ethical considerations, their right to withdraw from the study at any time, and contact information for the researchers. Participants were reminded that the survey must be completed on a desktop or laptop computer with functioning audio/speakers. They were then asked to consent to participating in the study. If participants declined to participate,

they were redirected to a webpage thanking them for their response. If they chose to participate, they were directed to the demographic questionnaire and the SATAQ-4 Thin/Low Body Fat subscale. Next, participants were randomly assigned to the loving kindness meditation or control meditation. Several methods were utilized to confirm that participants engaged in the meditations. First, participants were not shown the "Next" button until adequate time has passed for them to listen to the meditation. Additionally, participants were screened out of the meditation if they spent more than 20 minutes on the meditation page. They were asked to list at least one loving kindness phrase they repeated (i.e., loving kindness meditation condition) or to describe the place in their body where they noticed the most tension (i.e., body scan control condition). Finally, all participants were asked an open-ended question about how they felt in their bodies following the meditation (i.e., "How do you feel in your body after this experience?").

Following completion of the meditation, participants completed the weight IAT within Qualtrics, which was created using the ShinyApp online platform. IAT blocks were randomized so that they were not presented in the same order for all participants (Carpenter et al., 2019). Participants then completed the post-measures in the following order: mDES, CFI, SCS-SF, CCS, ATOP, and demographic questions. At least one validity check was interspersed throughout the post-measures (e.g., "Choose response B for this question."). After participants completed the post-measures, they were asked to provide an email address to be entered into the raffle for an Amazon gift card. Finally, participants were debriefed about the purpose of the study (see Appendix G).

Chapter Three: Results

The goal of this study was to address the need for preventative interventions that increase compassionate, empathic care for patients with higher weight by reducing weight bias in nursing students. Furthermore, we selected an intervention that hypothetically extends beyond psychoeducation and targets the mechanisms that contribute to weight bias. We aimed to address gaps in the literature on LKM by identifying potential mechanisms through which LKM yields change in weight stigma on an interpersonal level. Overall, the primary goal of the study was to explore the LKM as a brief intervention that may reduce bias by increasing positive, other-focused emotions, self-compassion, and cognitive flexibility in order to improve empathic, compassionate, affirmative care for patients with higher weight.

Data Preparation

Participants completed the survey through Qualtrics, and data was exported directly into SPSS 27.0 software. In total, 366 individuals started the survey, and 190 completed the survey in its entirety. The 176 participants who did not complete the survey were excluded from the study. One participant declined consent and 30 provided consent and then quit the survey. Out of the 145 participants who completed a portion of the survey, 86.9% completed between 10% and 20% of the survey, 6.9% completed between 31% and 40%, 1.4% completed between 41% and 50%, 1.4% completed between 61% and 70%, and 4.1% completed between 71% and 80% of the survey. The

majority of participants who did not complete the survey stopped once they were presented with the guided meditations. For participants who were assigned to a condition, drop-out rates did not differ significantly by condition ($\chi^2 = 2.58$, $p = .11$).

One additional participant was excluded from the study due to questionable validity check responses as well as excessive speed on the IAT. Excluded participants had a mean age of 28.47 years and the majority identified as women (97.3%), White (62.6%), and straight (87.1%). Furthermore, most excluded participants were full-time students (87.8%) pursuing their Bachelor of Science in Nursing (74.2%), and they reported an average of 256.9 hours of clinical experience. These demographics were mostly similar to those of the final sample, aside from racial/ethnic identity. The proportion of White participants in the final sample (75.1%) was slightly higher than that of the excluded participants (62.6%).

With regard to missing data, only one participant in the intervention condition did not complete two items on the survey. There was no other missing data in the entire data set. For that one participant, both items were reviewed for skewness using the -1 to 1 criterion outlined in Gamst et al. (2008). The skewness score for the missing SATAQ-4 item was -.175 (*SE* = .267), and -.888 (*SE* = .267) for the missing CFI item. Since the data for these items were not skewed and the missing data appeared to be strictly random, mean imputation was utilized (Kang, 2013). These mean values were inputted for the two missing values and used to calculate that participant's total scores for the two scales. Additionally, per the guidelines of Greenwald et al. (1998), one person was not assigned a *d*-score for the IAT due to excessive speed, although they were still included in the final sample.

Study Participants

The final sample included 189 participants, and demographic information is included in Table 3. Participants were randomly assigned to condition, with 80 participants in the intervention condition and 109 participants in the control condition.

Table 3: Participant Demographics

Demographics	Participants (N = 189)[a]	Percentage of Participants
Mean Age (SD, range)	29.77 (10.39, 43)	-
Gender Identity		
Woman	181	95.8
Man	7	3.7
Transgender	2	1.1
Non-binary	1	0.5
Other	0	0
Racial/Ethnic Identity		
White or European American	142	75.1
Latinx or Hispanic	25	13.2
Asian or Asian American	24	12.7
Black or African American	10	5.3
American Indian or Alaska Native	1	0.5
Multiracial	8	4.2
Other	1	0.5
Sexual Orientation		
Heterosexual or straight	167	88.4
Gay or lesbian	2	1.1
Bisexual	18	9.5
Pansexual	3	1.6
Asexual	2	1.1
Other	0	0
Relationship Status		
Married	50	26.5
Partnered	53	28.0
Single	81	42.9
Other	5	2.6
Education Level		
High school graduate (or equivalent)	4	2.1
Some college, no degree	74	39.2
Associate’s degree	34	18.0
Bachelor’s degree	63	33.3
Graduate or professional degree	10	5.3

Other	4	2.1
Degree Program		
Associate in Nursing	27	14.3
Bachelor of Science in Nursing	139	73.5
Master of Science in Nursing	10	5.3
Registered Nursing Program	7	3.7
Other	6	3.2
Year in Program		
First	51	27.0
Second	47	24.9
Third	27	14.3
Fourth	59	31.2
Fifth and above	5	2.6
Other	0	0
Current Enrollment Status		
Part-Time	22	11.6
Full-Time	164	86.8
Completed Clinical Hours (SD, range)	257.57 (637.31, 8000.00)	--
Previous Meditation Experience		
Yes	142	75.1
No	47	24.9
Body Size		
Smaller bodied	72	38.1
Larger bodied	58	30.7
Straight sized	39	20.6
Other	20	10.6
Shirt Size		
XXS	2	1.1
XS	22	11.6
S	47	24.9
M	60	31.7
L	33	17.5
1L	16	8.5
2X	8	4.2
Other	1	0.5

[a]Totals for certain variables (i.e., race/ethnicity, gender identity, sexual orientation) will exceed the number of participants due to allowing participants to select more than one response.

Preliminary Analyses

Instruments in this study measured participants' internalization of the thin ideal (SATAQ-4 Thin/Low Body Fat subscale; Schaefer et al., 2015), attitude towards people

with obesity (ATOP; Allison et al., 1991); internalized weight bias (IAT; Greenwald et al., 1998), self-compassion (SCS-SF; Raes et al., 2011), cognitive flexibility (CFI; Dennis & Vander Wal, 2010), positive emotions (mDES; Fredrickson et al., 2003), and compassionate care (CCS; Lee & Seomun, 2016). Descriptive statistics for each instrument were reviewed for the entire sample and by condition (see Tables 4 and 5).

Table 4: Descriptive Statistics for Study Variables for Whole Sample

	M	*SD*	*Min*	*Max*	*Range*	α
SATAQ-4	15.96	4.31	5.00	25.00	20.00	0.78
IAT	0.56	0.42	-0.90	1.41	2.31	--
ATOP	73.84	16.84	21.00	120.00	99.00	0.85
SCS-SF	35.01	7.93	20.00	60.00	40.00	0.83
CFI Total	109.58	12.54	78.00	138.00	60.00	0.86
CFI Alternatives	75.94	7.98	56.00	91.00	35.00	0.87
CFI Control	33.64	7.60	13.00	48.00	35.00	0.84
mDES POR	7.82	3.96	0.00	16.00	16.00	0.86
mDES PNOR	12.97	5.77	0.00	27.00	27.00	0.84
CCS	4.32	0.38	3.29	5.00	1.71	0.86

Abbreviations. SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire – 4, Thin/Low Body Fat Subscale; IAT, Implicit Association Test; ATOP, Attitudes Towards Obese Persons; SCS-SF, Self-Compassion Scale – Short Form; CFI Total, Cognitive Flexibility Inventory – Total; CFI Alternatives, Cognitive Flexibility Inventory – Alternatives Subscale; CFI Control, Cognitive Flexibility Inventory – Control Subscale; mDES POR, Modified Differential Emotions Scale – Positive, Other-Regarding Emotions Subscale; mDES PNOR, Modified Differential Emotions Scale – Positive, Non-Other-Regarding Emotions Subscale; CCS, Compassion Competence Scale.

Table 5: Descriptive Statistics for Study Variables by Condition

		M	*SD*	σ^2	*Min*	*Max*	*Range*	*Skewness*	*SE*
SATAQ-4	Intervention	16.67	3.97	15.75	8.00	25.00	17.00	.087	.271
	Control	15.43	4.48	20.10	5.00	25.00	20.00	-.093	.231
IAT	Intervention	0.53	0.43	0.19	-0.90	1.41	2.31	-.568	.271
	Control	0.58	0.41	0.17	-0.71	1.38	2.09	-.527	.231
ATOP	Intervention	75.10	15.38	236.62	32.00	107.00	75.00	-.304	.271
	Control	72.91	17.85	318.79	21.00	120.00	99.00	-.146	.231
SCS-SF	Intervention	34.94	7.46	55.60	20.00	53.00	33.00	-.040	.271
	Control	35.06	8.30	68.86	20.00	60.00	40.00	.294	.231
CFI Total	Intervention	110.21	11.71	137.17	80.00	136.00	56.00	-.258	.271
	Control	109.12	13.14	172.70	78.00	138.00	60.00	-.057	.231

CFI	Intervention	76.46	7.47	55.78	56.00	91.00	35.00	-.141	.271
Alternatives	Control	75.55	8.34	69.60	56.00	91.00	35.00	-.214	.231
CFI Control	Intervention	33.75	7.52	56.52	16.00	48.00	32.00	-.303	.271
	Control	75.55	8.34	59.29	13.00	48.00	35.00	-.564	.231
mDES POR	Intervention	9.48	3.41	11.59	1.00	16.00	15.00	-.312	.271
	Control	6.61	3.92	15.37	0.00	15.00	15.00	.222	.231
mDES	Intervention	14.83	4.98	24.75	2.00	27.00	25.00	.025	.271
PNOR	Control	11.61	5.95	35.43	0.00	24.00	24.00	.028	.231
CCS	Intervention	4.32	0.37	0.14	3.53	5.00	1.47	.070	.271
	Control	4.32	0.39	0.15	3.29	5.00	1.71	-.791	.231

Abbreviations. SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire – 4, Thin/Low Body Fat Subscale; IAT, Implicit Association Test; ATOP, Attitudes Towards Obese Persons; SCS-SF, Self-Compassion Scale – Short Form; CFI Total, Cognitive Flexibility Inventory – Total; CFI Alternatives, Cognitive Flexibility Inventory – Alternatives Subscale; CFI Control, Cognitive Flexibility Inventory – Control Subscale; mDES POR, Modified Differential Emotions Scale – Positive, Other-Regarding Emotions Subscale; mDES PNOR, Modified Differential Emotions Scale – Positive, Non-Other-Regarding Emotions Subscale; CCS, Compassion Competence Scale.

Testing of Assumptions

Statistical assumptions of Analysis of Variance (ANOVA) were assessed using recommendations by Gamst et al. (2008), including testing for independence, normality, and homogeneity of variance. The independence assumption was met because all observations were independent of one another (Gamst et al., 2008). To assess normality of the scales by condition, Q-Q plots and skewness were examined. Skewness values between -1 and 1 were deemed as within acceptable limits (Gamst et al., 2008). All scales within both conditions fell within these limits (see Table 5), and Q-Q plots revealed roughly straight lines for all scales; therefore, the assumption of normality was met.

The homogeneity of variance assumption was assessed first using Levene's Statistic. To meet this assumption using Levene's Statistic, *p*-values for each scale had to be above 0.05 (Gamst et al., 2008). Three scales did not meet this criterion: CFI Total Score ($p = 0.05$), mDES Positive, Other-Regarding Emotions ($p = 0.02$), and mDES

Positive, Non-Other-Regarding Emotions ($p = 0.08$). Because the design is not balanced, the variances for each scale were evaluated next to ensure the larger group was more variable. The greater variance was observed for the control group (i.e., the larger group) for all three scales (see Table 5). Next, to assess the severity of the violation and the presence of heterogeneity of variance, the F_{MAX} statistic was calculated for each of these scales. According to Keppel et al. (1992), an F_{MAX} value greater than 3.0 is indicative of heterogeneity of variance. Each scale's F_{MAX} value was lower than 3.0, meaning that the violation of homogeneity of variance is not severe (CFI Total Score, $F_{MAX} = 1.26$; mDES Positive, Other-Regarding Emotions, $F_{MAX} = 1.32$; mDES Positive, Non-Other-Regarding Emotions, $F_{MAX} = 1.43$). Therefore, a one-way ANOVA was used without adjustment.

Independent Variables

Table 6 presents Pearson bivariate correlations for demographic and study variables for the entire sample, and Tables 7 and 8 present these correlations by condition. Several statistically significant correlations were consistent across the entire sample, the intervention condition, and the control condition. Self-compassion was significantly, positively correlated with positive attitudes towards people with obesity (small effect size), cognitive flexibility (small effect size), participants' ability to both perceive and generate multiple explanations for difficult situations (small effect size), and participants' perception of situations being in their control (small effect size). Self-compassion was significantly, negatively correlated with participants' internalization of the thin ideal (small effect size). Positive attitudes towards people with obesity was significantly, negatively correlated with internalization of the thin ideal (small effect

size). Additionally, compassionate care was significantly, positively correlated with cognitive flexibility (small effect size), participants' ability to both perceive and generate multiple explanations for difficult situations (small effect size), positive, other-regarding emotions (small effect size), and positive, non-other-regarding emotions (small effect size). Correlations were also found in the expected directions between subscale scores for the mDES (large effect size) and total and subscale scores for the CFI (large effect sizes).

Across the entire sample, internalization of the thin ideal was significantly, negatively correlated with age (small effect size), cognitive flexibility (small effect size), and participants' perception of situations being in their control (small effect size). Age was significantly, positively correlated with participants' perceptions of situations being in their control (small effect size). Significant correlations were found in the expected directions for positive attitudes towards people with obesity and weight bias (small effect size), cognitive flexibility (small effect size), participants' perceptions of situations being in their control (small effect size), and compassionate care (small effect size). Compassionate care was significantly, positively correlated with self-compassion (small effect size) and participants' perception of situations being in their control (small effect size). Furthermore, participants' ability to both perceive and generate multiple explanations for difficult situations was significantly, positively correlated with positive, other-regarding emotions (small effect size) and positive, non-other-regarding emotions (small effect size) across the entire sample.

Within the intervention condition, age was significantly, positively correlated with cognitive flexibility (small effect size) and significantly, negatively correlated with positive, non-other-regarding emotions (small effect size). Significant correlations were

found in the expected directions for weight bias and positive attitudes towards people with obesity (small effect size), as well as for self-compassion (small effect size) and compassionate care (small effect size). Finally, participants' ability to both perceive and generate multiple explanations for difficult situations was significantly, positively correlated with positive, other-regarding emotions in the intervention condition (small effect size). Bivariate correlation analysis was used to provide for support for the sixth hypothesis that there will be a significant, inverse correlation between self-compassion and weight bias for participants in the intervention condition.

For the control condition, participants' internalization of the thin ideal was significantly, negatively correlated with age (small effect size) and cognitive flexibility (small effect size). Positive attitudes towards people with obesity was significantly, positively correlated with participants' cognitive flexibility (small effect size), perception of situations being in their control (small effect size), and compassionate care (small effect size). Finally, compassionate care was significantly, positively correlated with participants' perception of situations being in their control (small effect size).

Table 6: Pearson Bivariate Correlations for Entire Sample

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Age	1	-.290**	.075	.069	.095	.075	-.079	.208**	.002	-.125	.059
2. SATAQ-4		1	.129	-.282**	-.303**	-.167*	-.078	-.194**	.071	.063	-.066
3. IAT			1	-.149*	-.072	-.007	.063	-.078	-.028	-.040	-.077
4. ATOP				1	.300**	.223**	.133	.228**	-.066	-.043	.214**
5. SCS-SF					1	.466**	.304**	.449**	.123	.142	.205**
6. CFI Total						1	.815**	.794**	.125	.120	.361**
7. CFI Alternatives							1	.294**	.198*	.206**	.358**
8. CFI Control								1	.000	-.019	.220**
9. mDES POR									1	.882**	.204**
10. mDES PNOR										1	.212**
11. CCS											1

*Note. *p < .05, **p < .01*

Abbreviations. SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire – 4, Thin/Low Body Fat Subscale; IAT, Implicit Association Test; ATOP, Attitudes Towards Obese Persons; SCS-SF, Self-Compassion Scale – Short Form; CFI Total, Cognitive Flexibility Inventory – Total; CFI Alternatives, Cognitive Flexibility Inventory – Alternatives Subscale; CFI Control, Cognitive Flexibility Inventory – Control Subscale; mDES POR, Modified Differential Emotions Scale – Positive, Other-Regarding Emotions Subscale; mDES PNOR, Modified Differential Emotions Scale – Positive, Non-Other-Regarding Emotions Subscale; CCS, Compassion Competence Scale.

Table 7: Pearson Bivariate Correlations for Intervention Condition

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Age	1	-.216	.007	.078	.076	.186	-.005	.294**	.032	-.228*	.104
2. SATAQ-4		1	.143	-.328**	-.238*	-.094	-.003	-.143	.080	.054	.034
3. IAT			1	-.244*	-.067	.020	.086	-.054	.127	-.029	-.129
4. ATOP				1	.360**	.111	.092	.081	-.208	-.161	.031
5. SCS-SF					1	.449**	.264*	.437**	.053	.141	.277*
6. CFI Total						1	.780**	.783**	.212	.094	.293**
7. CFI Alternatives							1	.222*	.297**	.197	.271*
8. CFI Control								1	.034	-.050	.187
9. mDES POR									1	.806**	.230*
10. mDES PNOR										1	.229*
11. CCS											1

*Note. *p < .05, **p < .01*

Abbreviations. SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire – 4, Thin/Low Body Fat Subscale; IAT, Implicit Association Test; ATOP, Attitudes Towards Obese Persons; SCS-SF, Self-Compassion Scale – Short Form; CFI Total, Cognitive Flexibility Inventory – Total; CFI Alternatives, Cognitive Flexibility Inventory – Alternatives Subscale; CFI Control, Cognitive Flexibility Inventory – Control Subscale; mDES POR, Modified Differential Emotions Scale – Positive, Other-Regarding Emotions Subscale; mDES PNOR, Modified Differential Emotions Scale – Positive, Non-Other-Regarding Emotions Subscale; CCS, Compassion Competence Scale.

Table 8: Pearson Bivariate Correlations for Control Condition

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Age	1	-.368**	.139	.058	.110	-.009	-.141	.138	-.055	-.092	.022
2. SATAQ-4		1	.141	-.276**	-.344**	-.223*	-.136	-.233	-.012	.009	-.131
3. IAT			1	-.084	-.079	-.022	.053	-.095	-.090	-.018	-.040
4. ATOP				1	.268**	.282**	.151	.318**	-.034	-.011	.325**
5. SCS-SF					1	.477**	.329**	.458**	.182	.155	.160
6. CFI Total						1	.835**	.802**	.065	.122	.405**
7. CFI Alternatives							1	.314**	.129	.199*	.414**
8. CFI Control								1	-.029	-.006	.243*
9. mDES POR									1	.908**	.207*
10. mDES PNOR										1	.213*
11. CCS											1

*Note. *p < .05, **p < .01*

Abbreviations. SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire – 4, Thin/Low Body Fat Subscale; IAT, Implicit Association Test; ATOP, Attitudes Towards Obese Persons; SCS-SF, Self-Compassion Scale – Short Form; CFI Total,

Cognitive Flexibility Inventory – Total; CFI Alternatives, Cognitive Flexibility Inventory – Alternatives Subscale; CFI Control, Cognitive Flexibility Inventory – Control Subscale; mDES POR, Modified Differential Emotions Scale – Positive, Other-Regarding Emotions Subscale; mDES PNOR, Modified Differential Emotions Scale – Positive, Non-Other-Regarding Emotions Subscale; CCS, Compassion Competence Scale.

Primary Analyses

Baseline Differences Between Groups

A one-way ANOVA was used to examine the baseline differences between the intervention and control groups with regard to study variables (see Table 9). Results indicated a statistically significant difference between the groups on the SATAQ-4, $F(1, 187) = 3.90$, $p = .05$, $\eta_p^2 = .02$, with higher levels of internalization of the thin ideal for the intervention group ($M = 16.67$, $SD = 3.97$) compared to the control group ($M = 15.43$, $SD = 4.48$) at baseline. A One-Variable Chi-Square Test was conducted to examine differences between groups with regard to prior meditation experience. Results did not indicate statistically significant differences between groups ($\chi^2 = .09$, $p = .76$).

Hypothesis 1: Participants who complete the LKM will demonstrate significantly higher self-compassion compared to participants in the meditation control condition.

A one-way ANOVA was used to examine the differences in self-compassion between the intervention and control groups (see Table 9). A significant effect of the intervention was not found on self-compassion ($F[1, 187] = .01$, $p = .91$). Therefore, this hypothesis was not supported.

Hypothesis 2: Participants who complete the LKM will demonstrate significantly higher compassionate care compared to participants in the meditation control condition.

A one-way ANOVA was used to examine the differences in compassionate care between the intervention and control groups (see Table 9). A significant effect of the intervention was not found on compassionate care (F[1, 187] = .93, p = .93). Therefore, this hypothesis was not supported.

Hypothesis 3: Participants who complete the LKM will demonstrate significantly lower weight bias compared to participants in the meditation control condition.

A one-way ANOVA was used to examine the differences in weight bias and positive attitudes towards people with obesity between the intervention and control groups (see Table 9). A significant effect of the intervention was not found on implicit weight bias (F[1, 186] = .83, p = .36) or positive attitudes towards people with obesity (F[1, 187] = .78, p = .38). Therefore, this hypothesis was not supported.

Hypothesis 4: Participants who complete the LKM will demonstrate significantly higher positive emotions compared to participants in the meditation control condition.

A one-way ANOVA was used to examine the differences in positive emotionality between the intervention and control groups (see Table 9). A statistically significant effect of treatment was found on the Positive, Other-Regarding Emotions subscale of the mDES, F(1, 187) = 27.40, $p < .001$, $\eta_p^2 = .13$, with greater levels of positive, other-regarding emotions for the intervention group (M = 9.48, SD = 3.41) compared to the control group (M = 6.61, SD = 3.92). Additionally, a statistically significant effect of

treatment was found on the Positive, Non-Other-Regarding Emotions subscale of the mDES, $F(1, 187) = 15.47$, $p < .001$, $\eta_p^2 = .08$. The intervention group demonstrated significantly higher levels of positive, non-other-regarding emotions ($M = 14.83$, $SD = 4.98$) compared to the control group ($M = 6.61$, $SD = 3.92$). Therefore, this hypothesis was supported.

Hypothesis 5: Participants who complete the LKM will demonstrate significantly higher cognitive flexibility compared to participants in the meditation control condition.

A one-way ANOVA was used to examine the differences in cognitive flexibility between the intervention and control groups (see Table 9). A significant effect of the intervention was not found on cognitive flexibility total score ($F[1, 187] = .35$, $p = .56$), the alternatives subscale ($F[1, 187] = .60$, $p = .44$), or the control subscale ($F[1, 187] = .03$, $p = .87$).

Path Modeling Analysis

We intended to utilize a mediation analysis to test the hypotheses regarding the mediating roles of positive, other-focused emotions, self-compassion, and cognitive flexibility between LKM and weight stigma. However, statistically significant differences were not found between the intervention and control group for all of the mediation (i.e., self-compassion, cognitive flexibility) and outcome variables (i.e., weight bias/positive attitudes towards people with obesity). Given that the LKM did not appear to create significant change in participants' levels of self-compassion, cognitive flexibility, weight bias, or positive attitudes towards people with obesity, a mediation analysis was not conducted.

Table 9: One-Way ANOVA Comparing Intervention vs. Control on Study Variables

Variable	Source	*df*	Sum of Squares	Mean Square	*F*	*p*	η_p^2
SATAQ-4	Between Groups	1	71.28	71.28	3.90	.05	.02
	Within Groups	187	3414.66	18.26			
	Total	188	3485.94				
IAT	Between Groups	1	.15	.15	.83	.36	.004
	Within Groups	186	33.01	.18			
	Total	187	33.16				
ATOP	Between Groups	1	221.63	221.63	.78	.38	.004
	Within Groups	187	53122.28	284.08			
	Total	188	53343.92				
SCS-SF	Between Groups	1	.74	.74	.01	.91	<.001
	Within Groups	187	11829.24	63.26			
	Total	188	11829.98				
CFI Total	Between Groups	1	54.85	54.85	.35	.56	.002
	Within Groups	187	29487.91	157.69			
	Total	188	29542.76				
CFI Alternatives	Between Groups	1	38.14	38.14	.60	.44	.003
	Within Groups	187	11923.43	63.76			
	Total	188	11961.56				
CFI Control	Between Groups	1	1.52	1.52	.03	.87	<.001
	Within Groups	187	10867.73	58.12			
	Total	188	10869.25				
mDES POR	Between Groups	1	377.47	377.47	27.40	<.001	.13
	Within Groups	187	2575.77	13.77			
	Total	188	2953.24				
mDES PNOR	Between Groups	1	478.22	478.22	15.47	<.001	.08
	Within Groups	187	5781.59	30.92			
	Total	188	6259.81				
CCS	Between Groups	1	.001	.001	.01	.93	<.001
	Within Groups	187	27.28	.15			
	Total	188	27.28				

Abbreviations. SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire – 4, Thin/Low Body Fat Subscale; IAT, Implicit Association Test; ATOP, Attitudes Towards Obese Persons; SCS-SF, Self-Compassion Scale – Short Form; CFI Total, Cognitive Flexibility Inventory – Total; CFI Alternatives, Cognitive Flexibility Inventory

– Alternatives Subscale; CFI Control, Cognitive Flexibility Inventory – Control Subscale; mDES POR, Modified Differential Emotions Scale – Positive, Other-Regarding Emotions Subscale; mDES PNOR, Modified Differential Emotions Scale – Positive, Non-Other-Regarding Emotions Subscale; CCS, Compassion Competence Scale.

Post-Hoc Analyses

Post-hoc analyses were run to examine the impact of participants' internalization of the thin ideal on the efficacy of the intervention as well as the relationship between the proposed mediators, demographic variables, and weight bias. More specifically, a one-way analysis of covariance (ANCOVA) was conducted to evaluate the impact of the intervention on weight bias and positive attitudes towards people with "obesity" when controlling for internalization of the thin ideal. Additionally, a multiple linear regression was conducted to examine the relationship for cognitive flexibility, self-compassion, and positive, other-regarding emotions with weight bias while controlling for participant demographics.

ANCOVA Testing of Assumptions

Statistical assumptions of Analysis of Covariance (ANCOVA) were assessed using recommendations by Gamst et al. (2008), including independence, normality, homogeneity of variance, linearity of regression, homogeneity of regression, and independence of the covariate from treatment effects. Independence, normality, and homogeneity of variance assumptions were met per the testing of assumptions for the one-way ANOVA analysis. To assess for linearity of regression, scatter plots were created to explore the relationship between the SATAQ-4 Thin/Low Body Fat Subscale and IAT as well as ATOP by condition. Across both conditions, scatter plots revealed linear relationships between the SATAQ-4 Thin/Low Body Fat Subscale and the

dependent variables. Therefore, this assumption was met. To assess homogeneity of regression, the groups by covariate interaction was examined. In order to meet this assumption, *p*-values for each interaction had to be above 0.05 (Gamst et al., 2008). Interactions for condition by IAT d-score and ATOP fell within these limits ($p = .11$ and $p = .77$, respectively); therefore, this assumption was met. Finally, results from the one-way ANOVA were reviewed to determine if the covariate was independent of treatment effects. The groups differed significantly at baseline with regard to internalization of the thin ideal. Therefore, this assumption was violated.

ANCOVA Analyses

Given that one of the ANCOVA assumptions was violated, results from this analysis should be interpreted with caution. A significant effect of treatment on weight bias when controlling for internalization of the thin ideal was not found, $F(1, 185) = .84$, $p = .36$, (see Table 10a). Additionally, a significant effect of treatment on attitudes towards people with "obesity" when controlling for internalization of the thin ideal was not found, $F(1, 186) = 2.29$, $p = .13$ (see Table 10b).

Table 10a: Analysis of Covariance Summary Table for Weight Bias

Source	Sum of Squares	df	Mean Square	*F*	Sig.	η^2
SATAQ-4	.66	1	.66	3.77	.05	.02
Condition	.15	1	.15	.84	.36	.01
Error	32.35	185	.18			
Total	33.16	187				

Abbreviation. SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire – 4.

Table 10b: Analysis of Covariance Summary Table for Attitudes Towards People with "Obesity"

Source	Sum of Squares	df	Mean Square	*F*	Sig.	η^2
SATAQ-4	4232.12	1	4232.12	16.23	<.001	.08
Condition	597.36	1	587.36	2.29	.13	.01
Error	48514.44	186	260.83			
Total	53343.92	188				

Abbreviation. SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire – 4.

Multiple Linear Regression Testing of Assumptions

Statistical assumptions of multiple linear regression were assessed using recommendations by Tabachnick and Fidell (2013), including independence of residuals, normality, linearity, and homoscedasticity. Assumptions were evaluated for both dependent variables of interest (i.e., ATOP total score and IAT d-score). Independence and normality assumptions for both dependent variables were met per the assumptions analysis for the one-way ANOVA. Additionally, the linearity assumption was met for both dependent variables per the assumptions analysis for the one-way ANCOVA.

The homoscedasticity assumption was evaluated by plotting the standardized residual term against the standardized predicted term for both dependent variables (i.e., ATOP total score and IAT d-score). Per Tabachnick and Fidell (2013), this assumption is met if the observed band encompassing the residuals is approximately equal in width for all predicted values of the dependent variable. This observation was consistent for both the ATOP total score and IAT d-score scatterplots. Therefore, the homoscedasticity assumption was met for both dependent variables.

Multiple Linear Regression Analyses

Two multiple linear regressions were calculated to predict participants' weight bias and attitudes towards people with "obesity" based on self-compassion, cognitive flexibility, and positive, other-regarding emotions. These analyses were conducted specifically for participants in the intervention condition. For the first model examining weight bias, the model fit was insignificant, F (3, 75) = .55, p = .65 (see Table 11). The model fit was significant for attitudes towards people with "obesity," F (3, 76) = 5.63, p = .002. Both self-compassion (β* = .78, p = .002) and positive, other-regarding emotions (β* = -1.02, p = .04) predicted attitudes towards people with "obesity." Cognitive flexibility was not predictive of attitudes towards people with "obesity" (β* = -.01, p = .93). According to these results, participants in the intervention condition with higher levels of self-compassion reported more positive attitudes towards people with "obesity." Additionally, participants in the intervention condition with lower levels of positive, other-regarding emotions reported more positive attitudes towards people with "obesity." Together, these variables predicted 18.2% of the variance in attitudes towards people with "obesity."

Table 11: Multiple Linear Regression for Attitudes Towards People with "Obesity"

Predictors	*B*	*Seb*	*Bet*	*T*	*Sig.*
Self-Compassion	.78	.24	.38	3.24	.002
Cognitive Flexibility	-.01	.16	-.01	-.09	.93
mDES POR	-1.02	.48	0.23	-2.13	.04
R = .43					
R^2 = .18					
F (3, 79) = 5.63**					

Note. ***p* < .01.
Abbreviation. mDES POR, Modified Differential Emotions Scale – Positive, Other-Regarding Emotions Subscale.

Next, these models were tested while controlling for demographic variables using a hierarchical (i.e., sequential) framework. Demographic variables, including age, shirt size, and education level were entered into the first step of analysis. Self-compassion, cognitive flexibility, and positive, other-regarding emotions were entered into the second step. For weight bias, the model fit was insignificant for both the first step, F (3, 75) = .71, p = .55, and second step of the regression, F (6, 72) = .65, p = .69. Based on these results, age, shirt size, and education level were not predictive of weight bias. Furthermore, self-compassion, cognitive flexibility, and positive, other-regarding emotions were also not predictive of weight bias for participants in the intervention condition.

For attitudes towards people with "obesity," the model fit was insignificant for the first step of the regression, F (3, 76) = .70, p = .56 (see Table 12). According to these results, age, shirt size, and education level were not predictive of attitudes towards people with "obesity" for participants in the intervention condition. When self-compassion, cognitive flexibility, and positive, other-regarding emotions were entered into the model,

the model fit became significant, F (6, 73) = 3.29, p = .01 (see Table 12). Self-compassion was predictive of attitudes towards people with "obesity," such that those with higher levels of self-compassion reported more positive attitudes towards people with "obesity" (β* = .79, p = .002). Positive, other-regarding emotions were also predictive of attitudes towards people with "obesity" (β* = -1.04, p = .03). More specifically, lower levels of positive, other-regarding emotions were predictive of more positive attitudes towards people with obesity. Cognitive flexibility was not predictive of attitudes towards people with "obesity" (β* = -.02, p = .91). While the first step of the model explained only 3% of the variance in positive attitudes towards people with "obesity," the second step explained an additional 19% of the variance in this dependent variable.

Table 12: Hierarchical Regression for Attitudes Towards People with "Obesity"

Predictors	R^2	ΔR^2	df	ΔF	β*	p
Step 1:	.03	N/A	76	N/A		
Age					.11	.56
Shirt Size					-1.13	.37
Education Level					1.38	.40
Step 2:	.21	.19	73	5.75		
Self-Compassion					.79	.002
Cog Flexibility					-.02	.91
mDES POR					-1.04	.03

Note. Cog Flexibility – Cognitive Flexibility; mDES POR, Modified Differential Emotions Scale – Positive, Other-Regarding Emotions Subscale.

Chapter Four: Discussion

In this study, we aimed to explore the feasibility of LKM for reducing weight bias in nursing students by increasing self-compassion, positive, other-focused emotions, and cognitive flexibility. Participants (189 nursing students) were randomly assigned to LKM or a body scan mindfulness meditation before engaging in an implicit bias task and answering several self-report measures. Prior research indicates that the loving kindness meditation (LKM) has promise for improving the patient-provider relationship given its association with improved positive emotions, confidence in providing compassionate care, social connectedness, and empathy (Rao & Kemper, 2017; Seppala et al., 2014). Furthermore, preliminary evidence suggests the feasibility of this intervention for decreasing implicit racial bias (Stell & Farsides, 2016). To our knowledge, this study is the first to examine the use of the LKM for reducing weight bias in healthcare providers. Below is a discussion of the results, limitations of the study, implications for clinical practice, and suggestions for future research.

Review of Hypotheses

LKM and Self-Compassion

We hypothesized that participants who completed the LKM would demonstrate significantly higher self-compassion compared to participants in the meditation control condition. A statistically significant difference in self-compassion between the conditions was not found; therefore, this hypothesis was not supported. While prior research

indicates that LKM results in greater improvements in self-compassion when compared to a waitlist control condition for oncology nurses (Weibel et al., 2017), as well as statistically significant increases in self-compassion for healthcare professionals (Rao & Kemper, 2017), the format and duration of LKM interventions vary greatly by study. More specifically, prior research on the LKM includes both individual and group meditations lasting anywhere from one, ten-minute session (e.g., Stell & Farsides, 2016) to eight, two-hour sessions (e.g., Condon et al., 2013). Furthermore, some studies coupled the LKM with reflection-based exercises and psychoeducation (e.g., Galante et al., 2016; Weibel et al., 2017). The one-time, 10-minute LKM in the current study may not have been robust enough to elicit higher levels of self-compassion for participants in the intervention condition as compared to the control condition. Given that the majority of prior research has utilized the LKM in longer durations and greater frequencies (e.g., Condon et al., 2013), future research may benefit from exploring the utility of longer, more frequent LKM sessions for increasing self-compassion in healthcare students. More specifically, interventions should last for at least four to eight weeks based on prior studies that found statistically significant effects of the LKM (Galante et al., 2016; Weibel et al., 2017). Shorter meditations (e.g., 10 minutes) should be utilized more frequently throughout the week and longer meditations (e.g., 1.5- to 2-hour sessions) may be sufficient once per week.

Furthermore, we did not measure participants' levels of self-compassion at baseline. As a result, we are unable to determine if the intervention and control groups differed at baseline with regard to self-compassion. Additionally, we cannot ascertain if

their self-compassion levels changed as a result of the intervention. It is possible that the intervention group had lower levels of self-compassion at baseline, therefore impacting our ability to see differences between the groups post-intervention. Future research exploring the use of the LKM for reducing weight bias may benefit from measuring and controlling for baseline differences in self-compassion as well as measuring changes in self-compassion from pre- to post-intervention.

LKM and Compassionate Care

Our second hypotheses aimed to show that participants who completed the LKM would demonstrate significantly higher compassionate care compared to participants in the meditation control condition. This hypothesis was not supported because statistically significant differences in compassionate care were not found between the two conditions. Our findings do not align with prior research demonstrating the efficacy of the LKM for improving healthcare providers' confidence in providing compassionate care for patients (e.g., Rao & Kemper, 2017).

Notably, preliminary research on the role of LKM for improving compassionate care has primarily involved working professionals rather than student populations. Rao and Kemper (2017) previously demonstrated the efficacy of LKM for improving compassionate care in healthcare professionals, including nurses, physicians, social workers, dietitians, and psychologists. To our knowledge, our study is the first to explore the use of the LKM for increasing compassionate care in nursing students, specifically. Given the strong face validity of the CCS (Sinclair et al., 2017), it is possible that nursing students, in particular, may be susceptible to the social desirability bias when reporting

their intentions for providing compassionate care. Reyes et al. (2013) found that graduating nursing students demonstrated higher levels of social desirability bias compared to first year students. Since 33.8% of our sample reported being at the end of their training programs (see Table 3), it is possible that participants' desire to present as compassionate healthcare providers could have diluted the impact of the intervention on this outcome variable.

Another explanation for our findings could be the similar mindfulness foundations of both the LKM meditation and body scan meditation. Hevezi (2016) utilized a combination of a mindful breathing technique for stress reduction, a breathing meditation for relaxation, and the LKM. These meditations, together, resulted in improvements in provider well-being and quality of care for their patients. In the current study, mindfulness alone could have been enough to elicit changes in compassionate care across conditions. Similar to the findings from Rao and Kemper (2017), improvement of participants' own well-being (i.e., positive emotionality) could have contributed to greater confidence in providing compassionate care. Future research should ascertain if mindfulness alone, and/or mindfulness plus self-compassion, are effective mechanisms by which to improve healthcare providers' confidence in providing compassionate care.

LKM and Weight Bias

To our knowledge, prior research has not explored the feasibility of the LKM for reducing weight bias broadly, as well as in healthcare student populations. However, there is evidence for the feasibility of the LKM for reducing racial/ethnic bias (Kang et al., 2014; Stell & Farsides, 2016). Therefore, we hypothesized that participants who

completed the LKM would demonstrate significantly lower weight bias compared to participants in the meditation control condition. Given that statistically significant differences were not found between the groups with regard to weight bias or positive attitudes towards people with obesity, this hypothesis was not supported. While our hypothesis was not supported, a statistically significant, positive correlation was found between positive attitudes towards people with obesity and self-compassion. However, effect sizes were small, providing additional evidence that the brief intervention was not robust enough to elicit changes in weight bias.

Predictors of weight bias have been explored, providing evidence for avenues to target this bias. Cohen & Persky (2019) demonstrated that healthcare focusing only on the behavioral factors related to higher weight (e.g., caloric intake, level of physical activity) further perpetuates stigma about patients with higher weight. Additionally, providers who endorse weight stigma also believe that patients are able to control their weight via behavioral changes (Garcia, 2016; Wang et al., 2016). Contrastingly, belief in the psychological etiology of "obesity" (e.g., chronic stress, mood disorders, eating disorders) is associated with less stigmatizing beliefs about patients and more empathic responses for providers (Khan et al., 2018). Prior research has demonstrated that psychoeducation-based interventions addressing one aspect of weight bias (i.e., controllability of weight) is somewhat effective in addressing weight bias in pre-service health students (Diedrichs & Barlow, 2011), but more is needed to address the complex, multi-faceted nature of this stigma. Therefore, we hypothesized that the LKM would

effectively target the cognitive and emotional processes of weight stigma to reduce this bias in nursing students.

The relationship between self-compassion and one's own body appreciation, body acceptance, and lower disordered eating has been established (Slater et al., 2017; Tylka et al., 2015), although there is a paucity of research examining the relationship between self-compassion and one's perception of others' bodies. Given the complexity of weight stigma and its social acceptability (Puhl & Heuer, 2010), it is possible that self-compassion interventions alone are not enough to mitigate this stigma towards others. In addition to targeting healthcare providers' self-compassion and empathy, interventions aimed at reducing weight stigma could also aim to address and provide psychoeducation about systems level issues, such as the problematic history of BMI (O'Hara & Taylor, 2018), the multitude of systemic factors outside of an individual's control that influence their weight (Jauch-Chara & Oltmanns, 2014; Sheesley, 2016; West & Jeffery, 2018), and the negative impact of systemic forms of weight stigma on patients' well-being (Lewis et al., 2011). Diedrichs and Barlow (2011) utilized a one-time, two-hour lecture on "obesity," weight bias, and multiple contributing factors to weight, which aimed to specifically target beliefs about the controllability of weight. Additional topics covered in the lecture included body image and the prevalence and consequences of weight bias in the healthcare setting. Participants also were taught strategies for avoiding weight bias and promoting more affirmative care in health settings. Their findings demonstrated a small to moderate effect of the intervention on weight bias that remained three weeks post-intervention (Diedrichs & Barlow, 2011). Perhaps simultaneously targeting

psychoeducation and the cognitive and emotional processes of weight stigma will result in a more effective intervention for healthcare providers.

LKM and Positive Emotionality

We hypothesized that participants who completed the LKM would demonstrate significantly higher positive emotions compared to participants in the meditation control condition. We found that participants in the LKM condition demonstrated significant higher positive, other-regarding and positive, non-other-regarding emotions as compared to the control group. Therefore, this hypothesis was supported.

Our findings align with prior research demonstrating the utility of the LKM for increasing positive emotions. Zeng et al. (2015) conducted a meta-analysis exploring the effect of the LKM on positive emotions, and results indicated medium effect sizes. One notable limitation in this meta-analysis was the small number of studies that compared the LKM to an active control group, as the majority of included studies utilized a wait-list control group or no control group at all (Zeng et al., 2015). Our study not only confirms prior research on the effect of the LKM on positive emotionality, but also demonstrates the effectiveness of the LKM as compared to an active control group. As a result, our findings provide preliminary evidence that the LKM may be more effective than mindfulness meditations alone for increasing positive emotionality.

Our results also indicate that the LKM increases positive emotionality towards the self as well as others, which is an important consideration for addressing issues within the patient-provider relationship. Prior research has demonstrated that higher levels of positive empathy are associated with greater compassion satisfaction and lower levels of

burnout in high-stress professions (e.g., mental health providers; Andreychik, 2019). Furthermore, self-compassion interventions specifically targeting healthcare providers' well-being have been found to significantly reduce burnout and secondary traumatic stress (Neff et al., 2020). The unique components of the LKM (i.e., guiding listeners to send love, kindness, and compassion towards the self and others) appear to be the active ingredients for increasing positive emotionality rather than mindfulness alone. Given the plethora of research indicating concerns with provider well-being and burnout (e.g., Shanafelt et al., 2012), it is necessary to identify interventions that can support providers on intrapersonal and interpersonal levels, such as the LKM.

Furthermore, our findings build upon prior research by exploring the relationship between the LKM and positive emotionality in healthcare providers. Seppala and colleagues (2014) examined the utility of a brief LKM intervention for increasing compassion and positive affect in undergraduate students to address issues related to provider well-being and quality of patient care. Compared to the control conditions (i.e., positive-affect and visualization exercises), LKM demonstrated a statistically significant improvement for other-focused positive affect and social connectedness, and a statistically significant decrease in self-focus (Seppala et al., 2014). Therefore, the authors asserted that the LKM appears to be a potentially "viable, practical, and time-effective solution for…improving quality of care in patients" (Seppala et al., 2014, p. 1). Because participants in that study consisted of undergraduate students, it was important to replicate these findings with those who are either pursuing or currently in the healthcare industry. Therefore, our study expands on the current literature by exploring

this relationship in nursing students, specifically. As a result, our study provides preliminary evidence for the feasibility of the LKM for increasing positive emotionality in healthcare providers.

LKM and Cognitive Flexibility

We hypothesized that participants who completed the LKM would demonstrate significantly higher cognitive flexibility compared to participants in the meditation control condition. Our findings did not demonstrate statistically significant differences between groups with regard to overall cognitive flexibility or the Alternatives or Control subscales. Therefore, this hypothesis was not supported.

Prior research has demonstrated that long-term mindfulness and meditation practices, in particular, increase cognitive flexibility (e.g., Moore & Malinowski, 2009; Fabio & Towey, 2018; Schanche et al., 2019). Moore and Malinowski (2009) conducted a study exploring the relationship between meditation, mindfulness, and cognitive flexibility with 25 Buddhist meditators with at least six weeks of meditation experience and 25 non-meditators. Results indicated that mindfulness and meditation practices were positively related to cognitive flexibility. Mediation analyses indicated that mindfulness, particularly acting with awareness and observing, was predictive of cognitive flexibility (Moore & Malinowski, 2009). Furthermore, preliminary evidence suggests a positive relationship between self-compassion and cognitive flexibility (Shahabi et al., 2019). Notably, findings are mixed regarding the impact of short-term mindfulness practices (i.e., 8-weeks or less) on cognitive flexibility (Lao et al., 2016).

Based on this prior research, there are a few potential explanations for our current findings. First, the LKM in the current study may have been too short to elicit changes in cognitive flexibility. It is possible that longer-term mindfulness and meditation practices are needed to elicit significant change. Additionally, since prior research has demonstrated the relationship between mindfulness meditations and cognitive flexibility (e.g., Fabio & Towey, 2018), it is possible that both the intervention and control meditations in the current study elicited changes in cognitive flexibility. Future research may benefit from further exploring how self-compassion interventions differ from mindfulness practices, broadly, with regard to changes in cognitive flexibility.

Self-Compassion and Weight Bias

We hypothesized that there would be a significant, inverse correlation between self-compassion and weight bias for participants in the LKM. Statistically significant correlations were not found between the SCS-SF and the IAT; however, statistically significant correlations were found with positive attitudes towards people with "obesity" (small effect size), indicating that higher levels of self-compassion were positively associated with positive attitudes towards people with "obesity." Therefore, this hypothesis was supported.

The LKM has been found to increase prosocial, cooperative behavior and positive affect, and encourages the application of these thoughts and behaviors towards both acquaintances and strangers. Scholars have suggested the utility of self-compassion interventions, including the LKM, for mitigating implicit biases, particularly implicit racial/ethnic bias (Burgess et al., 2017). With regard to healthcare providers, self-

compassion is hypothesized to engender empathy and awareness of biases, as well as mitigate burnout and compassion fatigue, resulting in patient-centered care (Burgess et al., 2017). Furthermore, preliminary research provides evidence for the feasibility of the LKM for reducing implicit racial bias (Kang et al., 2014; Stell & Farsides, 2016). However, there is little research exploring the relationship between the construct of self-compassion and implicit bias.

To our knowledge, our study is the first explore the relationship between self-compassion and weight bias, specifically. However, prior research has explored the relationship between self-compassion and one's feelings and perceptions toward their own body. Using self-compassion quotes on social media, Slater et al. (2017) found that women who viewed these quotes demonstrated significantly higher self-compassion, body appreciation, and body satisfaction compared to those who viewed appearance-neutral images. Furthermore, in a study exploring the impact of a self-compassion writing intervention on body image, researchers found that greater increases in self-compassion were associated with greater increases in positive body image (Ziemer et al., 2018). As a result, our study extends on this research by demonstrating that the LKM, in particular, helps extend self-compassion towards other people's bodies, not just one's own body.

Prior research has demonstrated the impact of self-compassion interventions for increasing compassion for others (Neff & Germer, 2013), supporting the notion that increases in self-compassion activate the parts of our brain that are associated with compassion. Furthermore, higher levels of self-compassion have been found to be associated with more perspective taking, compassion for humanity, empathic concern,

and altruism (Neff & Pommier, 2013). Given that interventions targeted at inducing empathy and perspective-taking result in decreased explicit and implicit bias (e.g., Shih et al., 2013), it makes sense that higher levels of self-compassion would be associated with lower levels of weight bias. Our results suggest that participants with higher levels of self-compassion were more empathic and compassionate towards people in larger bodies, resulting in lower levels of weight bias. Therefore, our study contributes to the literature by providing preliminary evidence for the inverse relationship between self-compassion and weight bias.

LKM Mediation Analysis

Assuming that our hypothesis regarding group differences in weight bias was supported, we intended to explore the mechanisms by which the LKM reduced weight bias. Specifically, we aimed to explore the roles of cognitive flexibility, self-compassion, and positive, other-focused emotions. However, since we did not see group differences in weight bias, we did not conduct this mediation analysis.

Our findings regarding group differences in positive emotionality post-intervention provide one potential explanation for the insignificant impact of our intervention on weight bias. We found that the intervention group demonstrated statistically significant higher levels of *both* positive, other-regarding and positive, non-other-regarding emotions. However, prior research has indicated that positive, non-other-regarding emotions (e.g., amusement) might actually elicit cognitive processes that perpetuate bias (i.e., simplistic, automatic processing; Griskevicius et al., 2010). Contrastingly, positive, other-regarding emotions (e.g., nurturant love) utilize systematic

(or controlled) processing, decreasing the likelihood of using stereotypes and judgments (i.e., bias) and increasing the likelihood of critical examination of information or ideas (Griskevicius et al., 2010). Furthermore, prior research indicates that LKM reduces racial bias partly through the mediation of positive, other-focused emotions *only* (Stell & Farsides, 2016).

Our results differ from those found by Stell and Farsides (2016) given that participants in the LKM reported higher levels of both positive, other-regarding and positive, non-other-regarding emotions. In order to activate participants' controlled processing to reduce the use of stereotypes/judgments, we would need to observe higher levels of positive, other-regarding emotions *only* for the LKM group. Therefore, it is possible that our participants in the LKM were not primed to utilize controlled processing as expected. Instead, they may have been utilizing automatic processing when thinking about people with higher weight. As a result, participants in the LKM may have been relying of stereotypes and judgments about people with higher weight rather than questioning those ideas.

Furthermore, cognitive flexibility has been found to decrease the use of automatic processing and increase controlled processing (Moore & Malinowski, 2009) and emotional regulation (Schanche et al., 2019). The lack of statistically significant differences between groups with regard to cognitive flexibility provides additional evidence for this explanation. Therefore, it is possible that participants in the LKM condition were utilizing automatic processing when completing bias measures, resulting in the perpetuation rather than attenuation of their weight biases. Future research should

examine further the feasibility of LKM for increasing cognitive flexibility and controlled processing given the discrepancy between prior research and the current study. Additionally, further exploration of the relationship between different types of positive emotionality and weight bias should be explored to better understand the mechanisms by which bias can be reduced.

Post-Hoc Analyses

ANCOVA

Prior research has demonstrated that lower levels of internalization of the thin ideal are related to greater body appreciation (i.e., positive opinions and acceptance of one's body; Andrew et al., 2016). Furthermore, preference for thin bodies has been found to be strongly associated with internalization of the thin ideal, dietary restraint, and body dissatisfaction (Dondzilo et al., 2019). However, there is lack of literature exploring the impact of the internalization of the thin ideal on one's perspectives of others with higher weight. Therefore, we conducted post-hoc analyses to determine if the effect of our intervention was confounded by participants' internalization of the thin ideal. When controlling for internalization of the thin ideal, statistically significant differences were not found between groups with regard to weight bias or positive attitudes towards people with "obesity." Due to the one statistical assumption violation for ANCOVA, these results should be interpreted with caution. Overall, we cannot conclude that the impact of the intervention on weight stigma was confounded by internalization of the thin ideal.

Multiple Linear Regression

Prior research has demonstrated that greater increases in self-compassion are associated with greater increases in positive body image (Ziemer et al., 2018). Furthermore, there is preliminary evidence for the role of positive, other-regarding emotions and cognitive flexibility in decreasing implicit racial bias (Stell & Farsides, 2016). However, there is a lack of literature exploring the predictive nature of self-compassion, cognitive flexibility, and positive, other-regarding emotions for individuals' attitudes towards others' bodies. Therefore, we conducted post-hoc analyses to examine this relationship for attitudes towards people with "obesity," particularly for participants in the intervention condition.

Results indicated that both self-compassion and positive, other regarding emotions were predictive of participants' attitudes towards people with "obesity." To our knowledge, our study is the first to demonstrate that higher levels of self-compassion are predictive of more positive attitudes towards people with "obesity." It appears that individuals' compassion towards the self is a key predictor for their ability to extend compassion to others with larger bodies. As a result, self-compassion may be a key factor to address when aiming to reduce individuals' weight stigma.

Interestingly, lower levels of positive, other-regarding emotions were predictive more positive attitudes towards people with "obesity." These findings do not align with prior research suggesting that higher levels of positive, other-regarding emotions are predictive of lower weight bias (Stell & Farsides, 2016). Griskevicius et al. (2010) found that different emotions activate different types of processing, regardless of whether they

are positive or negative in nature. More specifically, positive emotions like awe and nurturant love were found to activate systematic (or controlled) processing, whereas anticipatory enthusiasm, amusement, and attachment love were found to facilitate automatic processing (Griskevicius et al., 2010). Therefore, our findings are congruent with prior literature suggesting that positive emotions, broadly, facilitate the use of automatic processing (e.g., Bodenhausen et al., 1994; Ruder & Bless, 2003), which is associated with greater reliance on judgments and stereotypes that facilitate biases (Griskevicius et al., 2010). Future research should continue to explore the predictive nature of positive emotionality for weight bias, specifically, to better understand which emotions effectively mitigate weight bias.

Limitations

The current study has several limitations, including participant demographics, group differences at baseline, post-intervention measures only, intervention duration and frequency, survey format, and global health status. With regard to participant demographics, our sample included more White individuals and less men compared to estimates of the national nursing student population. More specifically, approximately 12% of nursing students identify as men and 67.8% as White (compared to 3.7% and 75.1% in our sample, respectively; American Association of Colleges of Nursing, 2017, 2020). Therefore, our sample is not entirely representative of the nursing student population, and generalization of our results to the larger population should be done with caution. However, our findings are informative with regard to future research and clinical interventions aimed at reducing weight bias in nursing students.

Baseline differences were found between the control and intervention groups. First, our design was not balanced due to randomization via Qualtrics as well as exclusion criteria. Within the final sample, 80 participants were assigned to the intervention group and 109 participants were assigned to the control group. Therefore, our ability to detect an effect of the intervention on outcome variables could have been impacted. Secondly, baseline differences were found between groups with regard to internalization of the thin ideal, with the intervention group endorsing significantly higher levels compared to the control group. While results indicated that internalization of the thin ideal did not confound the impact of the intervention, they should be interpreted with caution given the statistical assumption violation. Therefore, researchers may consider controlling for this variable at baseline in future studies.

In order to avoid priming participants to the purpose of the study and risking practice effects, we chose not to measure participants' baseline levels of self-compassion, weight bias, positive emotionality, compassionate care, and cognitive flexibility. As a result, we were unable to assess changes in the outcome variables across the intervention. Had we collected this data pre-intervention, we may have been able to determine that participants in the LKM demonstrated statistically significant differences from pre- to post-intervention as compared to the control condition, providing evidence for its utility to address weight bias. However, without this information about participants' baseline levels, we are unable to draw this conclusion. Also, we were unable to determine if the groups differed at baseline with regard to weight bias, positive emotionality, cognitive flexibility, compassionate care, and self-compassion. This information could have helped

explain our findings and/or provide evidence for controlling for these differences when analyzing our data.

Our results suggest that the duration and frequency of our intervention may not have been enough to elicit lower levels of weight bias and higher levels of cognitive flexibility and self-compassion as we had expected. While preliminary research has suggested the utility of a brief, 10-minute LKM for reducing racial bias (Stell & Farsides, 2016), we were unable to replicate these findings. Therefore, interventions should last for at least four to eight weeks based on prior research that has found statistically significant effects of the LKM (e.g., Galante et al., 2016; Weibel et al., 2017). Furthermore, shorter meditations (e.g., 10 minutes) should be utilized more frequently throughout the week and longer meditations (e.g., 1.5-hour sessions) may be sufficient once per week.

Additionally, we chose to utilize an active control condition in order to determine if the self-compassion emphasis of the LKM was the agent of change for participants' weight bias. We hoped to distinguish between the efficacy of mindfulness alone and mindfulness plus self-compassion. Based on our findings, it is possible that our intervention and control meditations were too similar, and/or the self-compassion components of the LKM were not enough to elicit change. Therefore, future research may benefit from including a third, inactive control group (e.g., waitlist control, period of silence) to better identify the "active ingredient" for mitigating weight bias.

In addition to limitations with the survey itself, the delivery of the survey and intervention via Qualtrics is another limitation of the study. While we incorporated validity checks and timing constraints to help ensure participants engaged in the

meditations, we cannot be certain of participants' level of attention and engagement during the meditations. Also, we could not control the environment in which participants were completing the survey, including the functionality of participants' computers (e.g., the volume/speakers). All of these factors could have influenced the efficacy of the intervention, resulting in our largely insignificant findings.

Finally, it is important to acknowledge that this research study was conducted during the COVID-19 pandemic, which has important implications for both the targeted population as well as the focus on weight stigma. First, participants included a frontline worker student population working and learning in the midst of the COVID-19 pandemic. Several participants indicated that they were actively working in the medical setting at the time of the study. Participants could have been experiencing elevated levels of distress and distractibility due to the pandemic, which could have impacted their experience of and engagement in the meditations. This context also could have influenced who elected to participate in the study – participants may have self-selected to participate due to a desire to decrease their own stress via mindfulness or elected not to participate due to increased stress. Additionally, several students indicated that their educational experience had been impacted by COVID-19 (e.g., unable to engage in direct patient contact). While we are unable to account for or control these variables retroactively, the context of global health likely contributed to participants' self-selection and engagement in the study.

Second, recent literature has postulated the negative impact of the COVID-19 pandemic on weight stigma. Given increased reports of COVID-19 and obesity in the

media, stigmatizing attitudes towards people with “obesity” likely have been reinforced. For instance, media reports have highlighted the negative, inaccurate messages that people with higher weight are responsible for their weight and a burden to the healthcare system (Flint, 2020). As a result, participants in the current study may have endorsed higher levels of weight stigma than they would have prior to the pandemic. These elevated weight bias scores could have impacted the efficacy of the intervention, requiring a more intensive intervention to effectively mitigate their weight stigma.

Future Directions

While we did not find a significant effect of the LKM on weight bias, we believe future studies should continue to explore this relationship with a few potential changes to the study deign. First, given that our hypotheses were mostly unsupported and prior findings regarding the impact of short-term mindfulness practices on cognitive flexibility is mixed (Lao et al., 2016), increasing the duration and frequency of the meditation may better address the mechanisms by which bias could be reduced. One single exposure to the LKM may not be enough to elicit change, but perhaps repeated, daily exposures of the brief LKM (e.g., Galante et al., 2016) could result in longer-lasting, significant changes in the mechanisms by which LKM reduces weight bias. On the other hand, longer exposures at less frequent intervals, such as one, 1.5- to 2-hour session weekly for eight weeks may also be efficacious. Additionally, increased duration and frequency together with psychoeducation about weight bias and the multitude of factors that contribute to weight may be a more effective combination for addressing the multi-faceted nature of weight stigma.

To better understand how the LKM functions to reduce bias, it is recommended that studies incorporate a self-compassion intervention, mindfulness intervention, and inactive control group (e.g., waitlist control or a silent, unguided reflection). Prior research has utilized similar models to assess the impact of various mindfulness meditation practices on outcome variables. For instance, Koopman-Holm et al. (2013) examined the impact of meditations on ideal affect, actual affect, and well-being by assigning participants to one of four conditions: 1) mindfulness meditation class, 2) compassion meditation class, 3) improvisational theater class, and 4) no class control group. Across the 8-week intervention period, participants completed measures assessing target variables at baseline, four weeks, and eight weeks. The authors were able to examine differences in outcome variables between meditation and non-meditation conditions, broadly, as well as between the two types of meditation conditions and active and inactive control groups (Koopman-Holm et al., 2013). In the current study, we did not utilize an inactive control group or pre-intervention measures, although future research may consider incorporating these components like Koopman-Holm et al. (2013).

In order to avoid further stigmatizating people with higher weight, future studies should consider changing the language of one of the loving kindness phrases in the intervention condition. The phrase "may (I/you) have health" may inadvertently reinforce healthism, or the placement of responsibility on the individual for their wellness (Crawford, 1980). Given that the current study aimed to remove blame from the individual and address systemic levels of bias, it would be prudent to adjust the language to be more consistent with a Health at Every Size® approach that reinforces acceptance

of one's body (Bacon, 2010). Therefore, the loving kindness phrase "may (I/you) have health" should be re-worded so that participants repeat, "May (I/you) have acceptance." Ideally, participants in the intervention condition will be primed to focus on body acceptance towards the self and others rather than health, further reducing stigmatizing beliefs.

We included both implicit and explicit measures of weight bias in the current study in order to fully capture participants' weight bias. Interestingly, the IAT provided little information about participants' weight bias as compared to the ATOP, calling into question the utility of this measure. However, it is also important to consider that we were unable to control participants' environment and equipment while completing this task, which could have impacted our findings. Additionally, some researchers have questioned the utility of the IAT and the construct of implicit bias generally (Sukhera et al., 2019), and others have demonstrated that the IAT is sensitive to social desirability bias (Boysen et al., 2006). More specifically, implicit bias assessment results have indicated significantly lower bias when completed in public spaces as compared to private spaces (Boysen et al., 2006). Therefore, prior research demonstrating the susceptibility of graduating nursing students to the social desirability bias (Reyes et al., 2013) together with our findings suggests that this tool may not be the best measure of weight bias. Face valid self-report measures may also be susceptible to social desirability bias, suggesting that future research may consider utilizing patient and/or supervisor report along with self-report measures like the ATOP to accurately measure weight bias.

Given that we found statistically significant differences between groups at baseline with regard to internalization of the thin ideal, future studies may consider exploring the relationship between this construct and weight bias. It would be helpful to understand if there is a direct relationship between these variables so that interventions can target both the intrapersonal and interpersonal processes of weight bias. Additionally, researchers may consider exploring how individuals with higher levels of internalization of the thin ideal react to interventions targeted at reducing weight bias towards others, and if there are differences as compared to those with lower levels of internalization of the thin ideal. Given that there is a paucity of research on the relationship between these variables, there is potential for understanding another contributing factor to one's weight bias towards others.

Furthermore, future studies should carefully consider the impact of the Internalization of the Thin Ideal subscale on participants. Given the stigmatizing nature of the items on this subscale (e.g., "I want my body to look like it has little fat"), participants' thin ideal may be enhanced following the completion of this measure, which could have also enhanced their bias towards people with higher weight. In the current study, it is possible that participants' thin ideal was augmented prior to engaging in the body-focused interventions, impacting participants' negative feelings toward their own bodies and others' bodies. It would have been helpful to measure this variable both before and after the intervention to determine if internalization of the thin ideal increased as a result of attuning to their bodies in the intervention. Therefore, future research should consider these factors for scale selection and study design.

Future studies should also consider recruiting a sample that is more representative of a larger group of healthcare professionals. We intentionally selected nursing students to provide evidence for an intervention that was preventative in nature (i.e., before the students are practicing full-time) and targeted the group that is largest proportion of healthcare providers in the United States (American Association of Colleges of Nursing, 2019). However, it is important to examine the feasibility of the intervention for other types of healthcare professionals as well as those at different stages in their career. Furthermore, given that our sample predominantly identified as women and White, future studies should aim to recruit a sample with greater gender and racial/ethnic diversity. By recruiting more diverse populations, we will be better able to generalize the findings to a broader group of healthcare providers or determine which healthcare providers will benefit most from this intervention.

Implications

The prevalence of weight bias in patient care still exists at alarming rates, and the majority of research has focused on the prevalence and implications of this bias rather than on ways to reduce bias (Puhl & Heuer, 2009). More specifically, prior research has demonstrated that approximately one-third of healthcare student populations endorsed beliefs that patients with "obesity" lacked motivation to make health behavior changes, felt frustrated when working with these patients, and described their patients as non-adherent to medical treatment (Puhl et al., 2014). There also is a lack of literature exploring ways to address the cognitive and emotional factors contributing to weight bias. Therefore, our study begins to fill this gap by exploring the feasibility of the LKM

for reducing weight bias. Our findings provide preliminary evidence for the potential of the LKM to increase positive emotionality in nursing students. Since preliminary research has demonstrated the role of positive, other-regarding emotions in reducing racial/ethnic bias (Stell & Farsides, 2016), our study provides additional evidence for the need to further explore this pathway for reducing bias. Furthermore, our study provided evidence for the relationships between weight bias and self-compassion, weight bias and compassionate care, and self-compassion and compassionate care. These findings together shed light on factors that may be important for weight bias reduction. While we did not find significant differences between groups with regard to weight bias, there were several limitations in our study design that could have impacted our ability to detect an effect of the intervention. Therefore, our study provides a starting place for future research exploring interventions to reduce weight bias in healthcare providers.

There is a plethora of research demonstrating the negative impact of provider weight bias on patient well-being and medical care (e.g., Phelan et al., 2015; Gudzune et al., 2014). Patients' reported concerns with the patient-provider relationship include but are not limited to unclear explanations, shorter medical visits (Wong et al., 2014), lack of trust in providers, and centralization of health issues around weight (Alberga et al., 2019; Williams, 2018). As such, there is a need for interventions targeting systems contributing to bias. Our intervention aimed to address this issue at the provider level, but demonstrated that a single intervention may not be enough to significantly mitigate bias. Furthermore, given that weight bias is one of the last forms of socially acceptable bias (Puhl & Heuer, 2010), it is clear that more work needs to be done to change this rhetoric

and denounce weight bias within the larger medical setting. It will be challenging to encourage change at the provider level if the systems they work within still perpetuate these biases, which is an important aspect of psychologist advocacy and social justice work. Therefore, interventions should aim to address the psychoeducational, cognitive, and emotional components of weight bias at different systemic levels to elicit significant change. Psycho-education about weight bias and asking folks to complete IATs are not enough – we need to radically change the way healthcare providers and healthcare systems think about, feel about, talk about, and treat their patients with higher weight.

Furthermore, our study provides evidence for the use of self-compassion interventions in nursing student training. Since we found that higher levels of self-compassion were associated with lower levels of weight bias and higher levels of compassionate care, self-compassion interventions may be an important addition to training programs. Nursing students may benefit from regularly practicing self-compassion throughout training to build a compassionate stance towards the self and others. Ideally, starting this practice early and encouraging it throughout training should promote long-term behaviors that improve provider well-being and, therefore, the patient-provider relationship (e.g., Rao & Kemper, 2017; Seppala et al., 2014). For instance, nursing programs may consider incorporating weekly self-compassion didactics and experiential activities that specifically incorporate marginalized patient populations (e.g., patients with higher weight). These trainings could include psychoeducation about self-compassion and related meditations, the impact of biases on care for marginalized populations, and in-vivo self-compassion meditations (e.g., LKM). By intentionally

drawing the connection between this practice and patient care, nursing students may be better able to mitigate their biases and provide empathic, patient-centered care to patients with higher weight.

Conclusion

The current study aimed to explore the feasibility of LKM as a brief intervention that reduces weight bias by increasing self-compassion, positive, other-focused emotions, and cognitive flexibility in nursing students. Participants in the LKM condition endorsed significantly higher levels of positive emotionality compared to those in the control condition, suggesting that mindfulness alone is not enough to elicit change in this area. As such, the "active ingredient" in self-compassion interventions may be necessary to increase positive emotionality. Furthermore, higher levels of self-compassion were shown to be related to lower levels of weight bias, supporting the notion that increases in self-compassion activate the parts of our brain that are associated with compassion (Neff & Germer, 2013). Statistically significant differences in self-compassion, cognitive flexibility, weight bias, and compassionate care were not found between the groups, suggesting that a one-time, 10-minute LKM is not robust enough to elicit changes in these constructs. The current findings provide new information regarding the complexity of weight bias, suggesting the need to further explore the mechanisms that must be targeted to effectively reduce bias. Furthermore, this study offers a new direction for weight bias research by targeting one's compassion towards the self as well as others.

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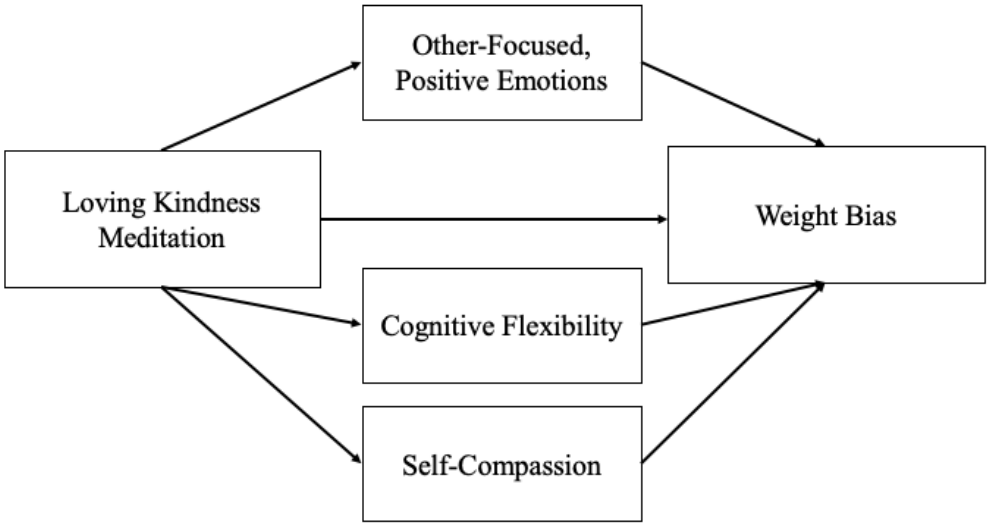
Appendix A

Hypothesized Mediation Model



Appendix B
Meditation Scripts

Introduction to Both Meditations
Find a quiet comfortable place to sit, with your back gently supported, in a relaxed posture. Let your eyes close, fully or partially. Take a few easy, slow breaths, bring your awareness to your body and into the present moment.

Loving Kindness Meditation (adapted from Kristin Neff's Loving Kindness Meditation and from https://www.youtube.com/watch?v=dO017qMseCc)
Now, recall a time that you felt a sense of well-being. Whatever well-being feels like to you, try to recall those sensations and feel them in this present moment. Hold this feeling and repeat to yourself:
May I be well. May I be well.

Now, recall a time that you felt immense joy and happiness. If you cannot recall a memory, imagine what this immense feeling of joy and happiness could feel like. Hold this joy and let it radiate throughout your body. Hold this feeling and repeat to yourself:
May I be happy. May I be happy.

Now, recall a time that you felt a sense of health. Whatever health feels like to you, try to recall those sensations and feel them in this present moment. Hold this feeling and repeat to yourself,
May I have health. May I have health.

As you repeat this wish for yourself, notice any thoughts and feelings that may arise. You may find difficulty in sending loving kindness to yourself, and this is OK. Repeat:
May I be well.
May I be happy.
May I have health.

Bring to mind a person for whom you care deeply. This could be a child, a grandparent, a friend – whoever naturally brings happiness to your heart and a smile to your face. Allow the feelings of what it is like to be in the company of that person come into the present moment. Now, recognize how vulnerable this loved one is. Just like you, vulnerable to sickness, aging, bad things happening, death. And just like you and every other living being, your loved one wishes to be happy and healthy and free from suffering. Repeat:
May you be well. May you be well.
May you be happy. May you be happy.
May you have health. May you have health.

When you notice that your mind has wandered, return to the words and the image of the loved one you have in mind. Return to the feelings of warmth, kindness, love, and compassion.

Now, bring to mind someone that you do not know very well and have neutral feelings towards. Perhaps someone you see in your neighborhood, at a shop, or at a bus stop. Imagine this person is sitting next to you. Direct feelings of love and kindness towards this person. Repeat:
May you be well. May you be well.
May you be happy. May you be happy.
May you have health. May you have health.

Visualize the love from your heart radiating outwards and surrounding this person. Visualize them receiving your love. Notice how extending love towards this person makes you feel. Is it easy? Is it difficult?
May you be well. May you be well.
May you be happy. May you be happy.
May you have health. May you have health.

Visualize your whole body in your mind's eye, notice any tension, discomfort, stress, or uneasiness that may be lingering within you, and offer warmth, comfort, and kindness to yourself.

Now, open your eyes and look at the picture of the person on the screen. This person is likely a complete stranger to you. Imagine this person is sitting next to you. Direct feelings of love and kindness towards this person.
May you be well. May you be well.
May you be happy. May you be happy.
May you have health. May you have health.

Visualize the love from your heart radiating outwards and surrounding this person. Visualize them receiving your love. Notice how extending love towards this person makes you feel. Is it easy? Is it difficult?
May you be well. May you be well.
May you be happy. May you be happy.
May you have health. May you have health.

Now bring your attention to your breath, take a few easy comfortable breaths, and just rest quietly in your own body, savoring the good will and compassion that flow naturally from your own heart. Know that you can return to the phrases and the feelings that come with them anytime you wish. Whenever you are ready, click "next" on your screen to proceed.

Body Scan Meditation (adapted from https://soundcloud.com/mindfulness-works/yvonne-body-scan-mw)
Bring your awareness to your right big toe in your right foot. And then your other toes. You may want to wiggle your toes to bring your attention to them, and then allow them to

rest. Now feel the sole of your right foot, moving next towards the heel of your foot, the top of your foot, the sides of your foot, up through your ankle.

Bring your attention now to your right shin, your calf, up through your knee, your kneecap, and the back of your knee. Notice your quad muscle at the front of your thigh, and up the back of your thigh. Think about the connection to the chair where you sit. Feeling the connection of your whole right leg, scanning from the foot to the top of your right thigh. Let's gently move to your left side.

Bring your awareness to your left big toe in your left foot. And then your other toes. Again, you may want to wiggle your toes to bring your attention to them, and then allow them to rest. Now feel the sole of your left foot, moving next towards the heel of your foot, the top of your foot, the sides of your foot, up through your ankle.

Bring your attention now to your left shin, your calf, up through your knee, your kneecap, and the back of your knee. Notice your quad muscle at the front of your thigh, and up the back of your thigh. Think about the connection to the chair where you sit. Feeling the connection of your whole left leg, scanning from the foot to the top of your left thigh. Breathing in slowly and calmly, feeling that connection. Feeling both of your legs.

Allow yourself to be in this moment. Be mindful of how your legs feel now. They may feel slightly heavier on the chair – just let them sit how they want.

Moving up now, bringing your awareness to your pelvis area, through your buttocks, your lower back. Up through the front, your hips, the lower abdomen, your naval. Up the sides of your torso. Feeling the connection of your lower back, your middle back, and your upper back, resting against the chair where you sit.

Bringing that awareness, that attention, scanning the area up through your chest. And you may want to tune into your breathing now. Feeling the breath move through your abdomen up and down, or your chest in and out. How is your breath currently being used in the body? You may wish to place a hand over your abdomen or your chest to connect to this. See if you can feel the chest expand with each breath in, and collapse with each breath out. Scanning all of the areas of your torso.

Moving up now to your shoulders and your collar bone. Noticing all the muscles and bones. Scanning down your right arm now, your shoulder, all the way down your biceps, your triceps, your elbow, your forearm, your wrist, your hand, your thumb, moving on to your other fingers. You may wish to move them gently now. Feeling the back of your hand, your palm. Relax your right arm completely.

Moving your attention into your left arm now. Scanning down your left arm, your shoulder, all the way down your biceps, your triceps, your elbow, your forearm, your wrist, your hand, your thumb, moving on to your other fingers. Again, you may wish to

move them gently now. Feeling the back of your hand, your palm. Relax your left arm completely.

Bringing your awareness to your neck. The front of your neck. The back of your neck. Feeling how your head is sitting on top of your neck. Scanning up through the jaw area, thinking about the jaw, your chin, your lips, your teeth, and your tongue. Your jaw may wish to fall open now as you relax into this meditation. Scanning your cheeks, your cheek bones, your upper lip, your nose, up through the delicate eye area. Moving up the sides of your head, scanning the ears, the back of your head. Scanning all the way up the forehead to the top of your head. Letting it sit how it wants. Breathing in now, feeling the air coming through your nostrils or your mouth. Feel it come in and move throughout your body, and feel it come back out again.

Now, open your eyes and look at the picture of the person on the screen. Bring your awareness to the parts of this person's face, just like you did with your own. Notice their jaw, their chin, their lips. Scan their cheeks, their cheek bones, their upper lip, their nose, up to their eyes. Moving up the sides of their head, their ears. Scanning all the way up their forehead to the top of their head.

Now bring your attention to your breath, take a few easy comfortable breaths, and just rest quietly in your own body. Whenever you are ready, click "next" on your screen to proceed.

Appendix C

Demographic Questions

DIRECTIONS: Please answer the following questions to the best of your ability. If there are any questions you are uncomfortable answering, please skip that question and move to the next item.

Pre-Assessment Demographic Questions:

1. What is your age? [open-ended]
2. What is your racial/ethnic identity? Select all that apply.
    a. White or European American
    b. Latinx or Hispanic
    c. Asian or Asian American
    d. Black or African American
    e. American Indian or Alaska Native
    f. Hawaiian or Other Pacific Islander
    g. Multiracial
    h. Other [please describe]
3. How do you identify your gender?
    a. Woman
    b. Man
    c. Transgender
    d. Genderqueer
    e. Non-binary
    f. Other [please describe]
4. What is your sexual orientation?
    a. Heterosexual or straight
    b. Gay or lesbian
    c. Bisexual
    d. Pansexual
    e. Asexual
    f. Queer
    g. Other [please describe]
5. What is your highest level of education completed?
    a. Less than high school
    b. High school graduate (includes equivalency)
    c. Some college, no degree
    d. Associate's degree
    e. Bachelor's degree
    f. Graduate or professional degree
    g. Other [please describe]
6. What degree program are you currently enrolled in?
    a. Certified Nursing Assistant (CNA) Certificate

    b. Licensed Practical Nurse (LPN) or Licensed Vocational Nurse (LVN) Certificate
    c. Associate in Nursing
    d. Bachelor of Science in Nursing
    e. Master of Science in Nursing
    f. Joint Master's Degree in Nursing (e.g., joint MSN/MPH)
    g. Registered Nursing Program
    h. Other [please describe]
7. What year of the program are you currently in?
    a. First year
    b. Second year
    c. Third year
    d. Fourth year
    e. Fifth year and above
8. What is your current enrollment status?
    a. Full-time
    b. Part-time
    c. Other [please describe]
9. Approximately how many clinical hours have you completed as a part of your nursing training? [open-ended]
10. Do you plan to pursue a nursing career in a specialty field (e.g., cardiology, pediatrics)?
    a. Yes
    b. No
11. [If yes to question 10] Please identify the specialty field you plan to pursue in the future. [open-ended]

Post-Assessment Demographic Questions:

1. Prior to this study, have you practiced any sort of meditation?
    a. Yes
    b. No
2. [If yes to question 1] How long have you been engaging in meditation practices? Please indicate the number of months. [open-ended]
3. [If yes to question 1] How often do you currently practice meditation?
    a. Daily
    b. Weekly
    c. Monthly
    d. Every other moth
    e. Other [please describe]
12. People describe their body size using a variety of different terms. Which of the following best describes your body size?
    a. Smaller bodied
    b. Larger bodied
    c. Straight sized

d. Other [please describe]

13. What size shirt do you typically wear?
    a. XXS
    b. XS
    c. S
    d. M
    e. L
    f. 1X
    g. 2X
    h. 3X
    i. 4X
    j. 5X
    k. 6X
    l. Other [please describe]

Appendix D
Measures

Thin/Low Body Fat Subscale of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4; Schaefer et al., 2015)

DIRECTIONS: Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

Items	Definitely Disagree	Mostly Disagree	Neither Agree Nor Disagree	Mostly Agree	Definitely Agree
1. I want my body to look very thin.	1	2	3	4	5
2. I want my body to look like it has little fat.	1	2	3	4	5
3. I think a lot about looking thin.	1	2	3	4	5
4. I want my body to look very lean.	1	2	3	4	5
5. I think a lot about having very little body fat.	1	2	3	4	5

SCORING: Sum the responses to all items.

Attitudes Towards Obese Persons Scale
(ATOP; Allison et al., 1991)

DIRECTIONS: Please mark each statement according to how much you agree or disagree with it. Please do not leave any blank. Use the numbers on the following scale to indicate your response.

-3	-2	-1	+1	+2	+3
I strongly disagree	**I moderately disagree**	**I slightly disagree**	**I slightly agree**	**I moderately agree**	**I strongly agree**

1. _____ Obese people are as happy as nonobese people.

2. _____ Most obese people feel that they are not as good as other people.

3. _____ Most obese people are more self-conscious than other people.

4. _____ Obese workers cannot be as successful as other workers.

5. _____ Most nonobese people would not want to marry anyone who is obese.

6. _____ Severely obese people are usually untidy.

7. _____ Obese people are usually sociable.

8. _____ Most obese people are not dissatisfied with themselves.

9. _____ Obese people are just as self-confident as other people.

10. _____ Most people feel uncomfortable when they associate with obese people.

11. _____ Obese people are often less aggressive than nonobese people.

12. _____ Most obese people have different personalities than nonobese people.

13. _____ Very few obese people are ashamed of their weight.

14. _____ Most obese people resent normal weight people.

15. _____ Obese people are more emotional than nonobese people.

16. _____ Obese people should not expect to lead normal lives.

17. _____ Obese people are just as healthy as nonobese people.

18. _____ Obese people are just as sexually attractive as nonobese people.

19. _____ Obese people tend to have family problems.

20. _____ One of the worst things that could happen to a person would be for him to become obese.

SCORING: Reverse code the negatively worded items (i.e., items 2 through 6, 10 through 12, 14 through 16, and 19 through 20). Sum the responses to all items, and then add 60 to the sum to obtain the total score.

Weight Implicit Association Test
(Weight IAT; Greenwald et al., 1998)

Weight IAT Images

Self-Compassion Scale-Short Form
(SCS-SF; Raes et al., 2011)

DIRECTIONS: Please read each statement carefully before answering. Indicate how often you behave in the stated manner, using the following scale:

Almost never				**Almost always**
1	**2**	**3**	**4**	**5**

_____ 1. When I fail at something important to me I become consumed by feelings of inadequacy.

_____ 2. I try to be understanding and patient towards those aspects of my personality I don't like.

_____ 3. When something painful happens I try to take a balanced view of the situation.

_____ 4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

_____ 5. I try to see my failings as part of the human condition.

_____ 6. When I'm going through a very hard time, I give myself the caring and tenderness I need.

_____ 7. When something upsets me I try to keep my emotions in balance.

_____ 8. When I fail at something that's important to me, I tend to feel alone in my failure.

_____ 9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

_____ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

_____ 11. I'm disapproving and judgmental about my own flaws and inadequacies.

_____ 12. I'm intolerant and impatient towards those aspects of my personality I don't like.

SCORING: Reverse code the negatively worded items, including items 1, 4, 8, 9, 11, and 12. Sum the responses to all items, and then divide the sum by 12 to compute the total mean score.

Cognitive Flexibility Inventory
(CFI; Dennis & Vander Wal, 2010)

DIRECTIONS: Please use the scale below to indicate the extent to which you agree or disagree with the following statements.

Strongly disagree	Disagree	Somewhat agree	Neutral	Somewhat agree	Agree	Strongly agree
1	2	3	4	5	6	7

1. I am good at "sizing up" situations.
2. I have a hard time making decisions when faced with difficult situations.
3. I consider multiple options before making a decision.
4. When I encounter difficult situations, I feel like I am losing control.
5. I like to look at difficult situations from many different angles.
6. I seek additional information not immediately available before attributing causes to behavior.
7. When encountering difficult situations, I become so stressed that I cannot think of a way to resolve the situation.
8. I try to think about things from another person's point of view.
9. I find it troublesome that there are so many different ways to deal with difficult situations.
10. I am good at putting myself in others' shoes.
11. When I encounter difficult situations, I just don't know what to do.
12. It is important to look at difficult situations from many angles.
13. When in difficult situations, I consider multiple options before deciding how to behave.
14. I often look at a situation from different viewpoints.
15. I am capable of overcoming the difficulties in life that I face.
16. I consider all the available facts and information when attributing causes to behavior.
17. I feel I have no power to change things in difficult situations.
18. When I encounter difficult situations, I stop and try to think of several ways to resolve it.
19. I can think of more than one way to resolve a difficult situation I'm confronted with.
20. I consider multiple options before responding to difficult situations.

SCORING: Reverse code the negatively worded items, including items 2, 4, 7, 9, 11, and 17. Sum the responses to all items to obtain the total score. The Alternatives subscale score is calculated by summing responses to items 1, 3, 5-6, 8, 10, 12-13, 14, 16, and 18-20. The Control subscale score is calculated by summing responses to items 2, 4, 7, 9, 11, 15, and 17.

Modified Differential Emotions Scale
(mDES; Fredrickson et al., 2003)

DIRECTIONS: Please think back to how you felt while listening to the meditation. Using the 0-4 scale below, indicate how much you agree with the following statement:

"During the meditation exercise, I felt _____."

0	1	2	3	4
Not at all	A little bit	Moderately	Quite a bit	Extremely

_____ 1. During the meditation exercise, I felt amused.

_____ 2. During the meditation exercise, I felt awe.

_____ 3. During the meditation exercise, I felt grateful.

_____ 4. During the meditation exercise, I felt hopeful.

_____ 5. During the meditation exercise, I felt elevated.

_____ 6. During the meditation exercise, I felt curious.

_____ 7. During the meditation exercise, I felt happy.

_____ 8. During the meditation exercise, I felt love.

_____ 9. During the meditation exercise, I felt proud.

_____ 10. During the meditation exercise, I felt content.

_____ 11. During the meditation exercise, I felt buoyant.

SCORING: Sum the responses to items 2, 3, 5, and 8 to obtain the total score for positive, other-regarding emotions subscale. Sum the response to items 1, 4, 6, 7, 9, 10, and 11 to obtain the total score for positive, non-other-regarding emotions.

Compassion Competence Scale
(CCS; Lee & Seomun, 2016)

DIRECTIONS: Read the following 17 items and indicate the response that applies to you for each item. There is no right or wrong answer. Respond to all items, but do not spend too much time thinking about your answers. You must check only one response from the five options (strongly agree, agree, neutral, disagree, or strongly disagree).

No.	Items	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I can express my compassion toward patients through communication with them.					
2	I am aware of how to communicate with patients to encourage them.					
3	In conversation, I have a sense of humor to induce a good mood in patients.					
4	Patients express their concerns and difficulties about diseases to me.					
5	I try to support patients through nursing to help them overcome their problems.					
6	When communicating with patients, I respond to them with proper nonverbal presentation.					
7	I participate in education to develop interpersonal relationships with patients, colleagues, etc.					
8	I can provide the required emotional					

	support to patients appropriately.
9	I am careful in my speech and behaviors so as to avoid hurting my patient's feelings.
10	I always pay attention to what patients say.
11	I promptly respond to patients when they ask for attention.
12	I am tolerant of others' opinions.
13	I am well aware of changes in patient's emotional condition.
14	I am intuitive about patients because of my diverse clinical experience.
15	I offer customized care to patients by taking their characteristics into consideration.
16	I look after patients without being influenced by personally challenging situations.
17	I can empathize well with patients' difficulty.

SCORING: Sum the responses to all items, and then divide the sum by 17 to compute the total mean score.

Appendix E

Sample Participant Recruitment Email

Dear Potential Research Participant,

My name is Ellen Joseph and I am currently a doctoral student in the Counseling Psychology Department at the University of Denver. I am writing to invite you to participate in my research study about the use of mindfulness meditations in nursing practices. You are eligible to be in the study if you are (a) at least 18 years of age, (b) proficient in reading, listening, and writing English, (c) enrolled part-time or full-time in a nursing training program, and (d) have access to a desktop or laptop computer with functioning audio and/or speakers. If you decide to participate in the study, you will be asked to engage in a mindfulness meditation and respond to several surveys, which should take approximately 30 to 40 minutes. Your contribution to this study can help advance our understanding of the utility of mindfulness meditation in nursing practices.

The University of Denver Institutional Review Board has granted (to be determined) status for this project. Upon completion of the study, you will be eligible to enter a lottery to receive one of 10 $15 Amazon gift cards. Instructions on how to enter the lottery will be included at the conclusion of the study. Remember, your participation in this study is completely voluntary. You can choose to withdraw from the study at any time. Your responses will be kept completely confidential and will not be connected to your academic program or standing. If you would like to participate please follow the survey link below or email me at ellen.joseph@du.edu. Also, please contact me if you have any questions about the study. You may also contact my faculty sponsor: Trisha Raque-Bogdan, PhD – trisha-raque-bogdan@du.edu – 303-871-2121.

Survey Link: https://udenver.qualtrics.com/jfe/form/SV_eloTWt2zDWrWcst

Thank you,

Ellen Joseph, MA
Doctoral Student, Counseling Psychology
Morgridge College of Education, University of Denver

Appendix F
Informed Consent

Title of Research Study: Mindfulness for Nursing Students
IRBNet #: TBD
Principal Investigator: Ellen Joseph, MA
Faculty Sponsor: Trisha Raque-Bogdan, PhD
Study Site: Department of Counseling Psychology, University of Denver

Purpose: You are being asked to participate in a research study because you have identified as (a) at least 18 years of age, (b) proficient in reading, listening, and writing English, (c) enrolled part-time or full-time in a nursing training program, and (d) have access to a desktop or laptop computer with functioning audio and/or speakers. The purpose of this research study is to explore the impact of a mindfulness intervention on nursing practices.

Procedures: If you participate in this research study, you will be asked to provide demographic information about yourself, engage in a mindfulness meditation, complete a task that measures attitudes towards health, and complete surveys. The demographic questions, meditation, the IAT, and surveys will take approximately 30 to 40 minutes to complete. There are no follow-up surveys, and your total time commitment would be approximately 30 to 40 minutes.

Voluntary Participation: Participating in this research study is completely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. You may choose not to continue with the meditation or answer the surveys for any reason without penalty or other benefits to which you are entitled. Your responses will be kept completely confidential and will not be connected to your academic program or standing.

Risks or Discomforts: Potential risks and/or discomforts of participation may include negative feelings or thoughts about your nursing practice.

Benefits: Possible benefits of participation include an opportunity to engage in a guided meditation that has proven to improve well-being and reflect about aspects of care for oneself and others. Additionally, you would be contributing to research on how mindfulness meditations could relate to positive outcomes for nursing care.

Incentives to Participate: Upon completion of the survey, you will be entered to receive one of 10 $15 Amazon gift cards. You will be asked to provide an email address to which the electronic gift cards would be sent.

Confidentiality: The confidentiality of your answers will be protected as best as possible. Due to the public nature of the Internet, absolute confidentiality cannot be promised. The likelihood of someone accessing your data is very improbable but a

theoretical possibility. Be sure to exit or close your Internet browser when you have completed the study to ensure that another person using that same computer cannot see your responses.

To keep your information safe throughout this study, the researcher will ensure that your identifying information will be kept separate from your responses. The master list will be kept on a password protected computer in a secure location in which only the primary researcher has access. In addition, in following the American Psychological Association's policies regarding data collection and retention, the master list will be destroyed by erasing it from the computer seven years after the study's completion. Your individual identity will be kept private when information is presented or published about this study.

Should any information contained in this study be the subject of a court order or lawful subpoena, the University of Denver might not be able to avoid compliance with the order or subpoena.

Before you begin, please note that the data you provide may be collected and used by Qualtrics Online System per its privacy agreement. This research is only for U.S. residents over the age of 18 (or 19 in Nebraska). Please be mindful to respond in private and through a secured Internet connection for your privacy. Your confidentiality will be maintained to the degree permitted by the technology used. Specifically, no guarantees can be made regarding the interception of data sent via the Internet by any third parties.

Questions: If you have any questions about this project or your participation, please feel free to contact Ellen Joseph at ellen.joseph@du.edu at any time.

If you have any questions or concerns about your research participation or rights as a participant, you may contact the DU Human Research Protections Program by emailing IRBAdmin@du.edu or calling (303) 871-2121 to speak to someone other than the researchers.

If you agree to participate in this research study, please indicate below.

Appendix G

Sample Debriefing Statement

General Aim and Purpose

Thank you for participating in this study. A variety of factors influence patient experiences with their healthcare providers, particularly for patients with higher weight. One factor in particular that has been thoroughly explored for this patient population is weight stigma. Self-compassion interventions have been found to be effective in improving the patient-provider relationship, broadly, but little research has explored their efficacy with reducing weight bias. The purpose of this study was to explore the utility of a self-compassion intervention for reducing weight stigma in nursing students.

Weight Implicit Association Task

The weight Implicit Association Task (IAT) is used to measure an individual's automatic associations for weight attitudes. The weight IAT is one of several implicit association tasks. More information about these tasks can be found at https://implicit.harvard.edu/implicit/takeatest.html

Survey Questions

The survey was designed using prior research exploring aspects of the patient-provider relationship for patients with higher weight. Prior research has shown that weight stigma is prevalent in our society as well as in the medical field. This study is one of the first to specifically examine the utility of a self-compassion intervention for reducing weight stigma.

Main Hypotheses

We hypothesize that the loving-kindness meditation intervention will reduce weight stigma by increasing self-compassion, cognitive flexibility, and other-focused, positive emotions. We also hypothesize that the intervention will improve confidence in providing compassionate care.

Deception

No deception practices were used in this study.

Contact Information and Therapy Services

If you feel upset or distressed as a result of participating in this study, please contact a mental health professional. The following mental health professionals have agreed to be listed as resources for participants in this project:

Crisis Support Resources:
National Crisis Text Line: Text HOME to 741741
National Suicide Prevention Lifeline: 1-800-273-8255
Colorado Crisis Services: 1-844-493-8255; Text TALK to 38255

You can locate a local mental health provider on the Psychology Today website: http://therapists.psychologytoday.com/rms/

If you have any questions about this research, please feel free to contact Ellen Joseph at ellen.joseph@du.edu.