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DROPPING THE WEIGHT BIAS: EVALUATING WEIGHT BIAS REDUCTION  
STRATEGIES FOR LATE ADOLESCENTS

by

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## ABSTRACT

### Dropping the Weight Bias: Evaluating Weight Bias Reduction Strategies for Late Adolescents

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Bias against higher body-weight individuals is a significant social problem. It is pervasive and associated with numerous negative psychological, social, physical, and behavioral consequences for those who experience it (see Puhl & Suh, 2015; Puhl et al., 2015). The internalization of negative weight attitudes (i.e., self-directed stigma) is also associated with increased psychological distress (e.g., anxiety, depression) and disordered eating (O'Brien et al., 2016). Given the aforementioned negative consequences, reduction of these negative attitudes is warranted. The current dissertation tested the effectiveness of three different theory-based weight bias reduction strategies: exposure to counter-stereotypic higher body-weight media models (study one), counter-stereotypic focused mental imagery (study two), and indirectly through a body gratitude exercise (study three). Results for study one indicated that participants in the counter-stereotypic video condition did not report significantly lower implicit or explicit weight bias when compared to participants in the neutral video condition. Results for study two indicated that participants in the counter-stereotypic mental imagery condition reported significantly lower negative weight attitudes when compared with participants in the stereotypic and neutral mental imagery conditions. Results for study three indicated that

participants in the body gratitude condition reported significantly higher body and appearance satisfaction and significantly lower internalized weight bias when compared to the neutral condition. However, no significant differences were found between the groups for reported levels of weight bias. Implications and future research directions for each of these studies are discussed.

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## Chapter One

### Introduction

#### **Weight Bias: An Illustration**

On September 3, 2015, comedian Nicole Arbour posted a video on her YouTube channel entitled “Dear Fat People.”<sup>1</sup> In this video, Arbour argues that “fat shaming is not a thing, fat people made that up.” She then goes on a six-minute tirade, hurling insults at higher body-weight persons and blaming them for their weight. She emphasizes throughout the video that she hopes to inspire people to lose weight, saying “if we offend you so much that you lose weight, I’m ok with that.”

As of March of 2016, this video had been viewed nearly 12 million times on YouTube and 34 million times on Arbour’s Facebook page. This massive amount of views does not, however, indicate wholesale endorsement of Arbour’s statements. In fact, there was tremendous variation in the more than one hundred thousand comments this video received on her Facebook page. These comments ranged from praise for Arbour and her “bravery” and “not being afraid to speak the truth,” to insults, threats, and demands for her to take the video down. The support this video received (over 300K Facebook ‘likes’ and more than 200K ‘shares’), and the many comments echoing the sentiments expressed in it, suggest Arbour’s attitudes are not atypical. Instead, this video stands as a striking example of the relative social acceptability of weight bias and the deep misunderstandings many individuals hold about the causes of obesity and the consequences of weight stigma. Indeed, a wealth of literature has documented the pervasiveness of weight bias in Western societies, as well as the numerous negative

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<sup>1</sup> <https://www.youtube.com/watch?v=CXFgNhyP4-A>

consequences associated with experiencing and internalizing this bias (O'Brien et al., 2016; Puhl & Suh, 2015; Puhl et al., 2015). Less is known, however, about how to reduce these negative weight attitudes. The current dissertation aims to address this issue.

## **Background**

Bias against individuals perceived to be overweight is a significant social problem. It is pervasive and associated with numerous deleterious psychological, social, physical, and behavioral consequences for those who experience it (see Puhl & Suh, 2015; Puhl et al., 2015). The internalization of these negative weight attitudes (i.e., self-directed stigma) is also associated with increased psychological distress (e.g., anxiety, depression) and disordered eating (O'Brien et al., 2016). Finally, experiences of weight bias often serve to perpetuate obesity through increased cortisol reactivity, exercise avoidance, risk for binge eating, unhealthy weight-control behaviors, and sleep disturbance (Eisenberg et al., 2003; Himmelstein, Incollingo, & Tomiyama, 2015; O'Brien et al., 2016; Puhl & Suh, 2015).

Given the significant consequences associated with weight bias, reduction of these negative attitudes is warranted. While a number of studies have sought to reduce weight bias, evidence for the success of these strategies is mixed (Dánielsdóttir, O'Brien, & Ciao, 2010; Lee, Ata, & Brannick, 2014). Much more work is needed in this area to design effective and efficient weight bias reduction strategies and develop better understandings of the psychological mechanisms underlying these negative attitudes. The current dissertation aims to contribute to the empirical literature by testing the effectiveness of three different theory-based weight bias reduction strategies: Counter-



stereotypic higher body-weight media models, counter-stereotypic focused mental imagery, and indirectly through a body gratitude exercise.

### **Weight Bias: Definition and Documentation**

Higher body-weight individuals are frequently stereotyped as being lazy, unmotivated, lacking willpower and self-discipline, self-indulgent, unattractive, unintelligent, unpopular, and sloppy (Robinson, Bacon, & O'Reilly, 1993). These widespread negative stereotypes often result in negative attitudes toward, and behaviors against, larger individuals. These negative attitudes and behaviors, referred to in the literature as weight bias, anti-fat prejudice, or anti-fat attitudes, can take many forms including weight-based teasing and name calling, physical bullying (e.g., hitting, kicking, shoving), and relational victimization (e.g., being avoided or ignored, social exclusion; Puhl & Latner, 2007).

Higher body-weight individuals report facing weight-based stigmatization across a number of domains, including educational, health-care, and workplace settings (Puhl & King, 2013). In educational settings, individuals have reported weight stigmatization from teachers, peers, and parents, often resulting in lower educational attainment and inhibited academic performance (see Puhl & King, 2013; Puhl & Latner, 2007). For instance, Puhl and Luedicke (2012) found that adolescents reported skipping school to avoid weight-based teasing, and furthermore they reported that their grades were harmed by these experiences. Similarly, Krukowski et al. (2009) found that differences in academic performance between overweight and average-weight students (i.e., poorer academic performance among overweight students) disappeared after controlling for experiences of weight-based teasing. Further, Burmeister and colleagues (2013) found

that having a higher BMI predicted fewer offers of admission to psychology graduate programs following in-person interviews. Swami and Monk (2013) found similar results wherein participants were less likely to select obese women (and emaciated women) for admission to a hypothetical university.

Another line of research suggests health-care providers are a common source of weight bias, even those specializing in obesity (O'Brien, Puhl, Latner, Mir, & Hunter, 2010; Puhl & King, 2013). For instance, Sabin, Marini, and Nosek (2012) found strong implicit bias, as well as a strong preference for thin over larger people, among individuals whose highest level of education was MD. Similarly high levels of weight bias have also been documented among dietitians, doctors, nurses, medical students, and professionals who specialize in treating eating disorders (Phelan et al., 2014; Puhl, Latner, King, & Luedicke, 2013; Swift, Hanlon, El-Redy, Puhl, & Glazebrook, 2012). Further, heavier individuals who anticipate being stigmatized by medical professionals due to their weight (e.g., disrespectful treatment from providers, embarrassment about being weighed) may be less likely to seek out preventative care and undergo age-appropriate screenings (see Puhl & King, 2013). Finally, studies have shown that physicians demonstrate lower levels of emotional rapport with obese patients (Gudzune et al., 2013), report intentions to spend less time with their heavier patients (Hebl & Xu, 2001), and spend less time educating obese patients about their health (Bertakis & Azari, 2005).

Experiences of weight stigmatization and discrimination are also present in workplace settings and interpersonal relationships. For instance, a number of studies have shown that obese employees, when compared to thinner employees with identical qualifications, are denied promotions, wrongfully terminated, receive lower wages, and

face discriminatory hiring practices (see Nowrouzi et al., 2015; Puhl & King, 2013). Research also demonstrates that obese and overweight women have more difficulty finding romantic partners and report having less satisfying relationships (see Puhl & King, 2013). Further, studies among college students have found that obese individuals are rated as less attractive, sexually unskilled, and deserving less attractive and heavier partners (Chen & Brown, 2005).

Weight bias is especially common among children and adolescents. Studies have documented negative weight attitudes in children as young as three (see Puhl & Latner, 2007). Furthermore, these weight-biased attitudes tend to become worse as children get older and frequently translate into weight-based teasing and victimization (Puhl & King, 2013). Indeed, Eisenberg, Neumark-Sztainer, and Story (2003) found that 30% of adolescent girls and 24.7% of adolescent boys reported being teased by peers. Relatedly, Puhl and Luedicke (2012) found that 29% of adolescents reported being teased about their weight, 65% of whom had BMIs in the normal weight range. Finally, using longitudinal data from the Project EAT study, Haines and colleagues (2013) found that weight-related teasing remained relatively high and stable during the transition from adolescence into adulthood.

### **Consequences of Weight Stigma**

Considering the prevalence and ubiquity of weight stigmatization, it is important to consider the numerous consequences associated with these experiences.<sup>2</sup> Several studies have documented a range of negative psychological consequences associated with

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<sup>2</sup> It should be noted that in many of these studies discussed here, associations remained after controlling for variables such as race, gender, age, and BMI (Eisenberg et al., 2003; Hatzenbuehler et al., 2012; Puhl & King, 2013). This suggests it is the experience of bias itself, and not other factors (e.g., BMI), leading to these consequences.

experiences of weight bias (e.g., body dissatisfaction, depression, anxiety, low self-esteem; see Puhl & King, 2013). For example, in a study of treatment-seeking obese adults, Friedman et al. (2005) found that individuals' number of previous stigmatizing experiences was strongly associated with body image disturbance. Similarly, Vartanian and Shaprow (2008) found a significant positive association between experiences of weight stigma and body dissatisfaction among female undergraduate students.

Beyond body dissatisfaction, Eisenberg et al. (2003) found that experiences of weight-based teasing resulted in lower self-esteem, depression, and suicidal ideations and attempts among adolescent boys and girls. Using data from the same project, Eisenberg et al. (2006) found that being the target of weight-based teasing predicted lower self-esteem, depression, and poor body image five years later. Additionally, among a nationally representative sample of overweight and obese individuals, Hatzenbuehler, Keyes, and Hasin (2009) found experiences of weight discrimination to be an important risk factor for mental and substance use disorders as well as psychiatric comorbidity.

Findings from a number of studies also demonstrate that weight stigma contributes to disordered eating and unhealthy weight-control behaviors (see Puhl & Suh, 2015). For instance, in a sample of 93 obese treatment-seeking adults, Ashmore and colleagues (2008) found that stigmatizing experiences significantly predicted binge eating behaviors. Neumark-Sztainer et al. (2002) also found that adolescent girls and boys who were frequently teased about their weight were more likely to binge eat or engage in unhealthy weight-control behaviors (e.g., dieting, diet pills) when compared to overweight boys and girls who were not teased. Further, prospective research has shown

that adolescents teased about their weight were more likely to binge eat five years later (Puhl & Latner, 2007).

Studies have also found that experiences of weight stigma often result in avoidance of health promoting behaviors like physical activity (Lewis et al., 2011; Puhl & Brownell, 2006). For example, Vartanian and Shaprow (2008) found that among female college students, experiences of weight bias was associated with motivation to avoid exercise. Relatedly, using semi-structured interviews, Lewis et al. (2011) found that higher body-weight individuals avoided physical activity in public spaces because they believed they would be “laughed at,” “stared at,” or “ridiculed” (p. 1354). Further, studies have found that children who report receiving negative comments during physical activity were more likely to avoid physical education class and physical activity (see Puhl & Latner, 2007).

The extent to which obese individuals believe negative weight-based stereotypes to be true has also been found to be associated with a number of detrimental outcomes (O’Brien et al., 2016). For example, Durso and colleagues (2012) found that overweight adults with binge eating disorder (BED) internalize weight-based stereotypes more than overweight adults without BED. Further, Vartanian and Novak (2011) found that individuals who were high in antifat attitudes and internalized weight bias were more likely to avoid exercise. Relatedly, O’Brien and colleagues (2016) found that weight bias internalization (and psychological distress) mediated the relationship between experiences of weight stigma and disordered eating. Finally, Pearl and Puhl (2016) found that participants assigned to focus specifically on internalizing (e.g. think/write about a time you had feelings of self-blame/worthlessness because of your weight) weight bias

reported lower self-esteem and positive affect and more negative affect when compared to participants instructed to focus on experiencing weight bias (e.g., think/write about a time you experienced unfair treatment due to your weight).

The research is clear that experiences of weight bias and the internalization of negative weight attitudes perpetuate obesity and frequently result in poor health outcomes and impaired quality of life. It is also quite apparent that beliefs about weight stigma serving as a catalyst for weight-loss or health improvement (see the weight bias illustration at the beginning) are unfounded. In fact, it is just the opposite. For instance, Puhl, Peterson, and Luedicke (2013) found that participants exposed to stigmatizing obesity-related health campaigns did not report greater motivation to improve lifestyle behaviors, and additionally reported less self-efficacy to engage in health behaviors, when compared to those exposed to less stigmatizing and more neutral campaigns. Additionally, Sutin and Terracciano (2013) found that participants who experienced weight discrimination were more likely to become or remain obese over time compared to those who had not experienced said discrimination.

### **Weight Bias Reduction**

The aforementioned consequences associated with experiences of weight bias, and the internalization of weight-biased attitudes, highlight the pressing need for effective strategies for reducing these attitudes. In a qualitative review of 16 weight bias reduction studies, Daníelsdóttir and colleagues (2010) found mixed evidence for the effectiveness of previously tested strategies. The authors grouped the interventions into three main categories based on the strategy utilized in the study: Controllability/causality, empathy, or social consensus. They found that interventions centered on changing causal

attributions of obesity were frequently successful in altering individuals' knowledge and beliefs about the causes of obesity. In most cases, however, actual levels of anti-fat prejudice remained unaffected. Similarly, attempts to reduce weight bias by evoking empathy for heavier persons were also found to be largely unsuccessful. The authors suggest that this lack of success may have been due in part to the emphasis placed on the negative aspects of being overweight and the portrayal of overweight individuals as being worthy of pity. In contrast, intervention efforts which manipulated individuals' social consensus perceptions, while few in number, showed promising results. Additionally, a number of the interventions that used a combination of these strategies found modest success (Daníelsdóttir et al., 2010). Based on their overall assessment of the extant intervention studies at that time, Daníelsdóttir et al. (2010) concluded that: 1) there is a dearth of studies examining methods for weight bias reduction; 2) methodological issues (e.g., study design, measurement) make comparing the effectiveness of particular methods for bias reduction difficult; 3) for most methods, levels of weight bias remained unchanged; and 4) more research is needed to understand the psychological factors underpinning weight bias.

In a more recent meta-analysis of 30 studies, Lee and colleagues (2014) found evidence for a small but positive effect ( $g = -0.33$ ) of reduction interventions on negative weight attitudes and beliefs. Similar to the conclusions offered by Daníelsdóttir et al. (2010), the authors found that methods fitting the dominant paradigm for weight bias reduction (e.g., manipulating controllability beliefs, invoking empathy) were on average no more effective than other types of interventions. Lee et al. (2014) suggest that future

researchers in the area should design and test novel strategies and develop better theoretical models for understanding the development of negative weight attitudes.

### **Etiology of Weight Bias**

One potential explanation for the lack of effective weight bias reduction interventions has to do with our poor understanding of the etiology of these negative attitudes. A number of theories have been offered as to why larger bodies elicit stigma, what social context variables may matter in forming these attitudes, and why these attitudes vary across time and space (Puhl & Brownell, 2003). Attribution theory is perhaps the most frequently invoked paradigm for understanding why people hold negative weight attitudes, but other frameworks based on media influence, disgust, and body image have also begun to receive attention in the literature.

**Attribution theory.** Attribution theory is generally concerned with how individuals understand and explain the things around them (e.g., people, events; Weiner, 1972). This theory posits that the causes of other people's dispositions are either within a person's control or outside of a person's control. Applied specifically to weight, individuals who think obesity is personally controllable may believe a person is obese because they did not have the willpower to resist eating junk food. In contrast, individuals who think obesity is *not* personally controllable may believe a person is obese because they do not have access to healthy foods in their neighborhood (Niederdeppe, Robert, & Kindig, 2011). The emphasis on an individual's personal control over their weight, rather than focusing on external or uncontrollable factors, often results in attributing weight to fundamental character flaws of the individual (e.g., lazy, lacking willpower, self-indulgent). These character flaws represent violations of certain moral and ideological



values commonly held in Western societies (e.g., the Protestant work ethic, self-discipline, hard work), and thus negative attitudes toward higher body-weight individuals often form as a result (Crandall, 1994; Quinn & Crocker, 1999).

A number of studies have shown that individuals' beliefs about the controllability of obesity are strong predictors of negative weight attitudes (Puhl & Brownell, 2003). For instance, in a sample of 415 undergraduates, Crandall and Moriarty (1995) found that weight was consistently perceived to be personally controllable. Furthermore, this perception of control was associated with more substantial social distancing from, and rejection of, higher body-weight persons. Relatedly, Pierce and Wardle (1997) found that overweight children who believed they were personally responsible for their own weight were at higher risk for negative outcomes (e.g., lower self-esteem) when compared to children who attributed their weight to an external cause (e.g., a medical issue). Other studies have found significant associations between perceived controllability of obesity and the endorsement of negative weight-based stereotypes among children (Anesbury & Tiggemann, 2000; Rukavina & Li, 2011).

**Media influence.** Also potentially influential in the etiology of anti-fat attitudes are messages about body ideals disseminated through the media. Idealized thin and muscular bodies are overrepresented in Western media and are touted as the epitome of physical attractiveness. Larger bodies, however, are greatly underrepresented on television. Only 13% of female and 24% of male characters are overweight on television, compared with 64.6% of females and 72.9% of males in the U.S. population (Ata & Thompson, 2010; National Center for Health Statistics, 2014). When overweight characters appear in the media, it is often in a minor role or as the object of ridicule

(Himes & Thompson, 2007; Puhl & Heuer, 2009). For example, Fouts and Burggraf (2000) found that heavier female characters in prime-time comedies were the target of more weight-related negative comments and those comments were frequently reinforced by positive audience reactions (e.g., laughter). Further, content analyses have shown that overweight characters in television shows are more likely to be presented as unattractive, unintelligent, engaging in stereotypic eating behaviors, and having fewer romantic partners (Ata & Thompson, 2010).

The justification-suppression model offers a useful framework for examining how stigmatizing portrayals of higher body-weight individuals may encourage negative weight attitudes. The justification-suppression model posits that justifications for prejudice (e.g., negative stereotypes, attributions) allow individuals to release suppressed negative attitudes (Crandall & Eshelman, 2003). Considering the normative negative portrayals of higher body-weight individuals in the media described above, it can be understood that the media supplies individuals with sufficient justification for their weight-based prejudices. In other words, seeing larger individuals portrayed as inactive or eating junk food in the media might reinforce notions that obesity is personally controllable and thereby allow the individual to feel justified in their dislike of overweight persons.

A small number of studies have provided evidence for a relationship between media exposure and levels of weight bias. For instance, Latner, Rosewall, and Simmonds (2007) found that adolescents' total media use (including videogames, magazines, and television) was significantly correlated with negative attitudes toward obese boys and girls. Further, Domoff and colleagues (2012) found that after viewing an episode of *The*

*Biggest Loser* (a reality television show about overweight individuals and their weight-loss journeys), participants had significantly higher levels of weight bias and considered weight to be more controllable by the individual. Finally, considering the ubiquity of stigmatizing portrayals of higher body-weight individuals in the media, a number of experimental studies have examined how exposure to these stereotypic images affects weight attitudes. Many of these studies found that participants exposed to stigmatizing portrayals of higher body-weight persons (e.g., photographic images), compared to participants who viewed non-stigmatizing images, reported more negative weight attitudes (McClure, Puhl, & Heuer, 2011; Pearl, Puhl, & Brownell, 2012) and were more likely support weight-discriminatory policies (Brochu, Pearl, Puhl, & Brownell, 2014). It should be noted that other studies have found no effect of non-stigmatizing media portrayals on weight attitudes (Gapinski, Schwartz, & Brownell, 2006; Flint, Hudson, & Lavalley, 2013), and thus this is an important area for further research.

**Disgust.** Disgust has also be posited to play an important role in the development and maintenance of anti-fat attitudes (O'Brien et al., 2013). From an adaptationist perspective, disgust is theorized to be an evolutionarily advantageous mechanism which promotes the avoidance of potentially harmful substances and undesirable others (Tybur, Lieberman, & Griskevicius, 2009). Tybur et al. (2009) proposed three domains for classifying disgust-evoking stimuli: Sexual (e.g., evolutionarily unfit partners), pathogen (infectious microorganisms), and moral (e.g., social norm violators). Applying this theory to weight bias, it can be seen that many commonly endorsed negative weight-based stereotypes center on the sexual appeal (e.g., unattractive, sexually undesirable, not good romantic partners), cleanliness (e.g., dirty, sweaty, smelly), and morality (e.g., sloth,

gluttonous) of higher body-weight individuals (O'Brien et al., 2013). Thus negative weight-based stereotypes may serve to elicit disgust toward obese individuals which may then fuel anti-fat attitudes.

A handful of studies have investigated these proposed associations between disgust and weight bias. Using fMRIs, Krendl and colleagues (2006) found that regions of the brain associated with disgust were activated when participants were exposed to images of stigmatized groups like higher body-weight persons. Furthermore, Vartanian (2010) found that individuals' tendency to react to situations with disgust predicted negative attitudes toward higher body-weight people. Additionally Lieberman, Tybur, and Latner (2012) found that stronger pathogen disgust sensitivity predicted increased antifat attitudes among women. Finally, O'Brien et al. (2013) found that among women, higher propensity toward disgust was significantly associated with greater dislike of higher body-weight people. Knowing that disgust sensitivity affects weight attitudes, it would be useful to examine whether an individual's level of disgust sensitivity might moderate the effects of weight bias reduction interventions.

**Social comparison theory and body image.** Social comparison theory (Festinger, 1954) posits that individuals have an innate drive to evaluate dimensions (e.g., attributes, abilities) of the self, often through comparisons with others. Specifically applied to physical appearance, individuals may make both upward and downward comparisons, comparing their own bodies and/or appearance against individuals perceived to be both superior and inferior (O'Brien, Hunter, Halberstadt, & Anderson, 2007). Holding negative attitudes toward higher body-weight individuals may then be rewarding to the in that they allow the individual to feel better about their own body by

negatively evaluating others' bodies (Dánielsdóttir et al., 2010). Thus negative weight attitudes may be driven by a need to support one's own body satisfaction.

A handful of studies have explored the relationships between body image and weight bias. Linking body image to weight discrimination, O'Brien, Latner, Ebner, and Hunter (2013) found that higher physical appearance evaluation and greater appearance orientation significantly predicted more discriminatory ratings of obese persons in a résumé rating task (e.g., starting salary, perceptions of leadership potential). Further, across two studies O'Brien and colleagues (2007) found that having a higher tendency to make physical appearance comparisons was significantly related to stronger antifat attitudes. Finally, O'Brien et al. (2009) found that a greater tendency to make downward appearance comparisons predicted greater antipathy toward heavier persons. Put another way, participants who reported comparing their appearance to individuals perceived to be inferior in attractiveness also reported more negative weight attitudes. Although this data is mostly correlational, it suggests that holding antifat attitudes and making downward physical appearance comparisons may benefit individuals through enhancing their own appearance satisfaction. Further experimental research is needed to establish more clear understanding of how these variables are related.

### **Purpose of the Present Research**

The overall aim of this dissertation is to test the effectiveness of three weight bias reduction strategies using samples of late adolescents (emerging adults) living in the United States. A secondary aim is to investigate the mechanisms underlying, and boundary conditions for, these effects. Essentially, this dissertation addresses the following questions: What strategies work to reduce negative weight attitudes? What are

the mechanisms through which the effective interventions are able to reduce weight bias?  
How generalizable are those effects?

This dissertation is based on three separate studies, each of which is described in detail in its own paper following this introduction. Because each paper presents specific information on the aims of that individual study, here I will present a brief overview of the general aims of each paper. The overall aim of this dissertation is to test weight bias reduction strategies, and thus each paper tests a different and novel (or at least sparsely examined) strategy. Paper one tests the effectiveness of counterconditioning as a bias reduction strategy through the presentation of counter-stereotypically portrayed higher body-weight media models. Paper two builds off of paper one, testing counterconditioning in a more cognitively-engaging manner. More specifically, paper two tests the effectiveness of counter-stereotypic focused mental imagery for weight bias reduction. Papers one and two also test a number of moderators (e.g., appearance orientation, disgust sensitivity) to explore the generalizability of the effects (or lack thereof). In a slight departure from papers one and two, paper three tests a strategy for reducing negative weight attitudes indirectly through body image improvement. In other words, paper three examines whether improvements in body image lead to subsequent reductions in weight bias. In addition to investigating a theorized underlying mechanism for negative weight attitudes (e.g., body image), paper three also explores the thus far unexamined area of internalized weight bias reduction.

## **Method**

### **General Overview**

All three papers presented in this dissertation use posttest-only randomized experimental designs. Papers one and three use one experimental and one control condition, while paper two uses a treatment, a comparison, and a control condition. Paper one examines as outcomes both explicit and implicit measures of weight bias, paper two focuses purely on explicit weight bias, and paper three examines explicit weight bias alongside body image and weight bias internalization. Table 1 displays the specific measures used for each study, and the measures themselves are explained in detail below. Full measures are also provided in Appendix D.

Table 1

*Overview of Variables Used in Papers*

Variable/ Paper	Paper 1	Paper 2	Paper 3
Explicit Bias			
AFA- Dislike	X	X	X
UMB- Negative Judgement	X	X	X
UMB- Social Distance		X	
Fat Phobia Scale (stereotyping)	X	X	X
Implicit Association Test	X		
Weight Bias Internalization		X	X
Body Image			
MBSRQ- Appearance	X	X	X
Evaluation			
MBSRQ- Body Area	X	X	X
Satisfaction			
MBSRQ- Appearance	X	X	
Orientation			
Downward Appearance	X	X	
Comparison			
Disgust Sensitivity	X	X	
Weight Management Behaviors			X

*Note.* AFA, Antifat Attitudes Scale; UMB, Universal Measure of Bias; MBSRQ, Multidimensional Body-Self Relations Questionnaire

## Participants

Participants for paper one were sampled from Rutgers University, Camden, using the Psychology student subject pool and students from the Childhood Studies department. Participants for papers two and three were recruited online using Amazon.com's mechanical Turk service. Sample size for each study was determined prior to recruitment to ensure adequate power to detect effects. Because this dissertation specifically examines late adolescents/emerging adults, participants had to be 18 to 25 years old in order to participate. Additionally, participants recruited online had to reside in the United States in order to participate. All participants provided consent and all study procedures were approved by the institutional review board of Rutgers University.

## Measures

**Explicit weight bias measures.** The dislike subscale of the Antifat Attitudes scale (AFA; Crandall, 1994; Quinn and Crocker, 1999) was used to assess participants' antipathy toward higher body-weight individuals (e.g., "I don't like fat people much"). Each item was measured using a nine-point Likert scale ranging from *very strongly disagree* to *very strongly agree*. In each paper, higher scores indicate more explicit antipathy toward overweight individuals.

The Universal Measure of Bias (UMB) was also used to measure explicit weight bias (Latner, O'Brien, Durso, Brinkman, & MacDonald, 2008). The UMB has been found to have good internal consistency and convergent validity. Responses were measured using a seven-point Likert scale ranging from *strongly agree* to *strongly disagree*. The UMB-FAT has subscales to assess negative judgment, social distance, attraction, and equal rights. This dissertation only made use of the negative judgment (e.g., "Fat people



tend toward bad behavior”) and social distance (e.g., “I would not want to have a fat person as a roommate”) subscales. Responses were coded so that higher scores indicated higher levels of bias.

**Explicit stereotypes.** The shortened form of the Fat Phobia Scale (F-scale) was used to assess the degree to which individuals associate negative stereotypes with being overweight (Bacon, Scheltema, & Robinson, 2001). This measure consists of 14 pairs of adjectives sometimes used to describe overweight people (e.g., “active/inactive,” “attractive/unattractive”) and was scored on a five-point semantic differential scale. For each paper, higher scores indicate greater levels of weight-based stereotyping.

**Implicit measures.** The Implicit Association Test (IAT) is frequently used in the field of social psychology to assess automatic attitudes toward social groups (e.g., race, sexual orientation, gender), namely in the context of social prejudice and stereotyping (e.g., Dasgupta, McGhee, Greenwald, & Banaji, 2000; Gapinski, Schwartz, & Brownell, 2006). The IAT is a reaction-time task which involves sorting a series of words into social and evaluative categories to form stereotype-consistent and stereotype-inconsistent pairings. If participants are able to classify words more quickly when categories are positioned in a stereotype-consistent manner, versus a stereotype-inconsistent manner, they are considered to be higher in implicit bias (Greenwald, McGhee, & Schwartz, 1998). Previous research has found the IAT to be a valid measure of implicit attitudes (Greenwald, Nosek, & Banaji, 2003).

Participants completed a computer-based weight version of the IAT. This task required them to sort positive words (*wonderful, pleasant, excellent, great*), negative words (*terrible, nasty, awful, despicable*), words describing thin people (*slim, thin,*

*skinny, slender*), and words describing overweight people (*large, obese, fat, heavy*), as quickly and accurately as possible into social (*fat people, thin people*) and/or evaluative (*good, bad*) categories (Teachman & Brownell, 2001). Participants completed seven rounds of sorting: (1) good or bad; (2) fat people or thin people; (3) thin people/good or fat people/bad; (4) thin people/good or fat people/bad; (5) fat people or thin people; (6) fat people/good or thin people/bad; (7) fat people/good or thin people/bad. Stereotype-consistent and stereotype-inconsistent pairings were counter-balanced. Greenwald, Nosek, and Banaji's (2003) improved scoring algorithm was used to calculate participant IAT scores. Higher scores indicate higher levels of implicit weight bias.

**Weight bias internalization.** Internalization of weight-biased attitudes was measured using the modified Weight Bias Internalization Scale (WBIS-M; Pearl & Puhl, 2014). This scale has been found to have strong construct validity and high internal consistency for individuals across various body weight statuses. The scale consists of 11 items measured on a 7-point Likert scale ranging from *strongly disagree* to *strongly agree*. Sample items include: "I hate myself for my weight" and "My weight is a major way that I judge my value as a person." Higher scores indicate a stronger degree of bias internalization.

**Body image.** The Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000) is a valid and reliable measure for assessing various aspects of body image. The 34-item scale contains subscales for appearance orientation, appearance evaluation, overweight preoccupation, self-classified weight, and body areas satisfaction. The nine-item body areas satisfaction subscale was used to measure body and appearance satisfaction. Participants reported on their level of satisfaction with discrete aspects of

their appearance (e.g., face, weight, overall appearance) using a five-point Likert scale from *very dissatisfied* to *very satisfied*, with higher scores indicating more satisfaction. The seven-item appearance evaluation subscale was used to assess general appearance satisfaction. Participants reported on their levels of overall satisfaction with their physical attractiveness (e.g., “I like my looks the way they are”) on a five-point Likert scale ranging from *definitely disagree* to *definitely agree*. Higher scores indicate greater appearance satisfaction. The eight-item appearance orientation subscale was used to measure the extent of participants’ investment in their appearance (“Before going out in public, I always notice how I look”). Participants responded using a five-point Likert scale ranging from *definitely disagree* to *definitely agree*, with higher scores indicating greater investment in one’s appearance.

**Physical appearance comparisons.** The Downward Appearance Comparison Scale (DACS; O’Brien et al., 2009) is a nine-item scale that measures tendency toward making appearance comparisons with targets perceived to be less attractive or inferior (e.g., “I tend to compare myself to those who have below average bodies”). This scale has been found to be both valid and reliable among adult populations. Participants responded using a five-point Likert scale ranging from *strongly agree* to *strongly disagree*. Higher scores indicate greater tendency to make downward appearance comparisons.

**Disgust sensitivity.** The 21-item Three Domain Disgust Scale (TDDS) was used to assess general disgust sensitivity (Tybur, Lieberman, & Griskevicius, 2009). The scale contains subscales for pathogen (e.g., “Standing close to a person who has body odor”), sexual (e.g., “Watching a pornographic video”), and moral (e.g., “Stealing from a neighbor”) disgust sensitivity. Participants reported their level of disgust for each item on

a six-point scale ranging from *not at all disgusting* to *extremely disgusting*. All of the items were averaged to create one total score for each participant, with higher scores indicating greater general disgust sensitivity.

**Weight management behaviors.** Participant's intentions to engage in various weight-management behaviors was assessed using four items created for this study. These items were measured on a seven-point Likert scale ranging from *very unlikely* to *very likely*. Items included: "Engage in some type of physical activity (e.g., walking, running, weight lifting, sports)," "Eat a healthier diet (e.g., more fruits and vegetables, less junk food)," "Go on a diet to lose weight," and "Use some other method to lose weight (e.g., diet pills, vomiting)." Higher scores indicate stronger intentions to engage in weight management behaviors.

## Papers

Below is a general overview for each paper. For the sake of brevity, only the paper abstract and analyses not included in the paper are provided. These additional analyses are included because they did not fit into the papers for various reasons (e.g., exploratory, non-significant), yet still may provide some useful information. Two-tailed *p*-values are reported for all hypotheses tests, and mediation and moderation models were ran using Hayes's (2013) PROCESS macro in SPSS.

### Paper One

**Title.** Big, bold, and beautiful? Examining the impact of counter-stereotypic higher body-weight media models on weight bias.

**Abstract.** The portrayal of higher body-weight individuals in the media has recently become an important topic for discussion in the United States. A number of

content analyses have shown that larger individuals in the media are typically either absent or portrayed in a stereotypic and stigmatizing manner (e.g., lazy, unintelligent, unattractive). While studies have demonstrated the potential negative effects of exposure to these stereotypic portrayals on weight attitudes, less is known about the effects of counter-stereotypic portrayals of higher body-weight individuals (e.g., attractive, intelligent, hardworking). The aim of the present study was to examine the influence of exposure to a counter-stereotypic higher body-weight media model on participants' implicit and explicit weight bias. Participants ( $N = 230$ ;  $M_{\text{age}} = 19.46$ ,  $SD = 1.70$ ) were randomly assigned to either a treatment ( $n = 115$ ; a video clip from the show *Drop Dead Diva*, featuring a counter-stereotypical higher body-weight female protagonist) or control ( $n = 115$ ; a video clip from a nature show) condition. Weight bias was measured using the Implicit Association Test, the Anti-fat Attitudes Scale, Universal Measure of Bias, and the Fat Phobia Scale. Contrary to predictions, findings indicated no main effects for condition. Participants in the counter-stereotypical treatment group did not report lower explicit or implicit weight bias when compared to the control group. These results suggest that negative attitudes toward individuals perceived to be overweight may be highly resistant to change. Furthermore, more research is needed to understand the effects of our changing media landscape on individual attitudes and behaviors.

**Additional analyses not included in paper.** To further investigate the lack of conditional effects, a number of moderation models were tested. Specifically, appearance orientation, disgust sensitivity, and downward appearance comparison tendency were examined as potential moderators. Based on previous studies which found significant positive associations between appearance investment (O'Brien et al., 2013), disgust

sensitivity (Lieberman et al., 2012; Vartanian, 2010), tendency to make downward appearance comparisons (O'Brien et al., 2009) and weight bias, I anticipated that the intervention may have differential effects based on participants' levels of these traits.

**Results and discussion.** Results indicated that appearance orientation, disgust sensitivity, nor downward appearance comparison tendency moderated the relationship between condition and any of the outcome variables (dislike, negative judgement, stereotyping, implicit weight bias; all interaction  $ps > .113$ ). Therefore the intervention effects were not contingent upon any of their aforementioned variables, nor were they contingent upon BMI (as reported in the paper). Further directions for exploration of other theoretically relevant moderators are mentioned in the general discussion.

## **Paper Two**

**Title.** Imagine that! Counter-stereotypic mental imagery reduces explicit weight bias.

**Abstract.** Higher body-weight individuals are highly stigmatized and face prejudice and discrimination across a number of domains. However, less is known about effective means for reducing negative weight attitudes. One strategy that has shown some success in bias reduction, yet has not been tested specifically for weight bias, is focused mental imagery. The purpose of this study was to investigate the effects of different types of mental imagery on explicit weight bias. Participants ( $N = 329$ ) were randomly assigned to one of two experimental conditions or a control group. In the experimental conditions, participants were asked to imagine either a counter-stereotypic (e.g., confident, attractive) or stereotypic (e.g., unattractive, insecure) obese person. Explicit weight bias was measured using the Antifat Attitudes scale (i.e., dislike), the Universal Measure of Bias

(i.e., social distance and negative judgement), and the Fat Phobia scale (i.e., weight-based stereotyping). Results indicated that participants in the counter-stereotypic condition, when compared to the stereotypic and control conditions, reported lower levels of dislike, negative judgement, and social distance attitudes. These findings highlight the potential usefulness of counter-stereotypic focused mental imagery to reduce explicit weight bias.

**Additional analyses not included in paper.** To further explore the significant main effects, a number of moderation analyses were conducted. Previous research has shown that individuals higher in appearance investment (O'Brien et al., 2013), disgust sensitivity (Lieberman et al., 2012; Vartanian, 2010), and tendency to make downward physical appearance comparisons (O'Brien et al., 2009) report higher levels of weight bias. I therefore predicted that the intervention may have differential effects based on participants' levels of these traits.

**Results and discussion.** Results indicated that appearance orientation, disgust sensitivity, nor downward appearance comparison tendency moderated the relationship between condition and any of the explicit weight bias variables (all  $ps > .253$ ). These results, in combination with the results indicating that BMI and gender did not moderate the relationship between condition and explicit weight bias (reported in the paper), suggest that the intervention has similar effects across groups. These results are useful in that they provide support for the effectiveness of this intervention for many types of people (e.g., people high in disgust, people high in appearance orientation). The general discussion outlines various other moderators that could be tested in future research to continue to explore the generalizability of these effects.

### **Paper Three**

**Title.** You have to love yourself first? Examining the effectiveness of a brief body gratitude intervention to reduce negative weight attitudes and internalized weight bias.

**Abstract.** Weight bias is associated with a number of negative consequences. Furthermore, the internalization of negative weight attitudes has been identified as an important predictor of psychological distress, disordered eating, and exercise avoidance. Drawing on social comparison theory, antifat attitudes are suggested to be rewarding because they allow individuals to feel better about their own bodies through the negative appraisal of others' bodies. The present study ( $N = 369$ ) tested the hypothesis that body image improvement, through a brief body gratitude exercise, would lead to a reduction in both negative weight attitudes and internalized weight bias. Results indicated that the treatment was effective at reducing weight bias internalization, yet did not result in lower levels of explicit weight bias. This study demonstrates the effectiveness of a body gratitude exercise for reducing internalized weight bias, and suggests further research is necessary to understand the psychological underpinnings of weight bias.

**Additional analyses not included in paper.** A number of post-hoc exploratory analyses were performed to explore the relationship weight bias internalization and intentions to engage in certain weight-management behaviors. These tests were conducted based on the literature demonstrating the associations between higher weight bias internalization and greater disordered eating (O'Brien et al., 2016). I hypothesized that participants in the body gratitude condition would report significantly lower intentions to engage in potentially harmful weight-loss behaviors (e.g. diet pills, vomiting) or go on a weight loss diet. Furthermore, I expected that the effect between condition and weight-management behaviors would be mediated by weight bias



internalization and body image. In other words, I predicted that the body gratitude exercise would lead to lower levels of weight bias internalization (and higher body and appearance satisfaction), which would in turn lead to lower intentions to engage in potentially harmful weight-loss behaviors or go on weight loss diets. I also hypothesized that there would be no difference between the conditions for intentions to engage in healthy weight-management behaviors.

**Results and discussion.** Composite scores were created combining the two healthy weight-management behaviors (e.g., eat more fruits and vegetables, engage in physical activity) and the two unhealthy weight-management behaviors (e.g., go on a weight loss diet, take diet pills or vomit) into separate single items. Independent samples *t*-tests indicated that participants in the body gratitude condition ( $M = 2.41$ ,  $SD = 1.63$ ) were significantly less likely to report intentions to engage in potentially harmful weight-loss behaviors (e.g., weight loss dieting, vomiting, diet pills) when compared to the control group ( $M = 2.80$ ,  $SD = 1.79$ ;  $t(367) = 2.18$ ,  $p = .030$ ). No significant differences were found between gratitude ( $M = 5.26$ ,  $SD = 1.43$ ) and control ( $M = 5.17$ ,  $SD = 1.41$ ;  $t(367) = -.633$ ,  $p = .527$ ) conditions for intentions to eat healthier or exercise more. Mediation analyses, using 5,000 bootstrap samples and bias corrected 95% confidence intervals, indicated that weight bias internalization, body area satisfaction, and appearance evaluation mediated the relationship between condition and intentions to engage in potentially harmful weight-loss behaviors (See Table 2). While exploratory, these results suggest that reductions in weight bias internalization may result in reduced likelihood of engaging in potentially harmful behaviors for the purpose of weight loss. Further research, ideally using longitudinal designs to assess how reductions in

internalized weight bias affect weight-management behaviors over time, is therefore needed.

Table 2

*Total, Direct, and Indirect Effects of Condition on Unhealthy Weight Control Behaviors Through Internalized Weight Bias and Body Image*

Mediator	Total	Direct	Indirect Effects
Internalized Weight Bias	<b>-.388</b> (.178)	-.160(.159)	<b>-.228</b> (.008) [-.414/-.068]
Body Area Satisfaction	<b>-.388</b> (.178)	-.266(.177)	<b>-.122</b> (.053) [-.259/-.044]
Appearance Evaluation	<b>-.388</b> (.178)	-.286(.176)	<b>-.102</b> (.048) [-.222/-.029]

*Notes.* 5,000 bootstrap samples, bias corrected 95% confidence interval (reported in brackets). Standard errors (reported in parentheses). Values in bold are significant ( $p < .05$ ).  $N = 369$ .

## Chapter Two

### Big, bold, and beautiful? Examining the impact of counter-stereotypic higher body-weight media models on weight bias

#### **Abstract**

The portrayal of higher body-weight individuals in the media has recently become an important topic for discussion in the United States. A number of content analyses have shown that larger individuals in the media are typically either absent or portrayed in a stereotypic and stigmatizing manner (e.g., lazy, unintelligent, unattractive). While studies have demonstrated the potential negative effects of exposure to these stereotypic portrayals on weight attitudes, less is known about the effects of counter-stereotypic portrayals of higher body-weight individuals (e.g., attractive, intelligent, hardworking). The aim of the present study is to examine the influence of exposure to a counter-stereotypic higher body-weight media model on participants' implicit and explicit weight bias. Participants were randomly assigned to either a treatment (a video clip from the show *Drop Dead Diva*, featuring a counter-stereotypical higher body-weight female protagonist) or control (a video clip from a nature show) condition. Weight bias was measured using the Implicit Association Test, the Anti-fat Attitudes Scale, the Universal Measure of Bias, and the Fat Phobia Scale. Contrary to predictions, findings indicated no main effects for condition. Participants in the counter-stereotypical treatment group did not report lower explicit or implicit weight bias when compared to the control group. These results reinforce previous findings that negative attitudes toward individuals perceived to be overweight may be highly resistant to change (Dánielsdóttir, O'Brien, &

Ciao, 2010). Furthermore, more research is needed to understand the effects of our changing media landscape on individual attitudes and behaviors.

## **Background**

In February of 2015, Ashley Graham made news headlines when she became *Sports Illustrated's* first-ever plus size swimsuit model. Perhaps even more shockingly, in January of 2016 Mattel announced the addition of a new 'curvy' Barbie to its line. These events did not occur in isolation, however, but instead are part of a larger cultural movement currently taking place in the United States. This movement, often termed the 'body positive movement,' seeks to disrupt the perpetual stream of idealized bodies in the mainstream media through showcasing bodies of varying sizes and shapes (Sastre, 2014). Considering the wealth of empirical data demonstrating the links between thin-idealized images in the media and negative physical and psychological outcomes (Blond, 2008; Grabe et al., 2008; Groesz et al., 2002), breaking this cycle could have important implications for individual and population health and well-being. There is, however, little empirical data on the effects of exposure to more diverse bodies in the media on individual attitudes. The present study aims to narrow this empirical gap by examining the effects of exposure to counter-stereotypic higher body-weight media models on levels of implicit and explicit weight bias.

## **Weight Bias, Higher Body-Weight Individuals, and the Media**

Higher body-weight individuals are frequent targets of stigmatization based on their body size, often being stereotyped as unmotivated, unintelligent, unattractive, and a host of other negative attributes (Brochu & Esses, 2011; Puhl & Heuer, 2009). These widespread negative stereotypes often translate into prejudice and discrimination against

higher body-weight persons. Further, experiences of weight bias (e.g., teasing, social exclusion, discrimination) are associated with numerous harmful outcomes including low self-esteem, body dissatisfaction, depression, anxiety, suicidal ideation, and shortened life expectancy (Eisenberg, Neumark-Sztainer, & Story, 2003; Puhl & Heuer, 2009; Sutin, Stephan, & Terraciano, 2015). Studies also show that higher body-weight individuals often internalize these negative attitudes, resulting in further issues such as exercise avoidance and disordered eating (O'Brien et al., 2016; Vartanian & Novak, 2011). Thus it can be seen that weight bias plays a significant role in perpetuating obesity, negative health outcomes, and diminished quality of life.

A number of explanations have been proffered as to why excess body fat is so highly stigmatized. These reasons include: the assignment of personal responsibility for weight gain to the individual; the importance of physical appearance for social identity construction; the high visibility of the stigma itself; and the pervasive negative messages about overweight bodies that emanate from various sociocultural sources (e.g., family, peers, the media; see Brewis, 2014). While family and peers surely play an important role in establishing body norms and ideals, the mass media is arguably the most potent purveyor of these messages (Ata & Thompson, 2010; Cusumano & Thompson, 1997).

Higher body-weight individuals are greatly underrepresented on television, as only 13% of female and 24% of male characters are overweight (compared to 64.6% of females and 72.9% of males in the U.S. population; Ata & Thompson, 2010; National Center for Health Statistics, 2014). When overweight characters do appear, it is often in a minor role or as the object of ridicule (Himes & Thompson, 2007). For instance, Fouts and Burggraf (2000) found that, among characters in prime-time comedies, heavier

female characters were the target of more weight-related negative comments which were frequently reinforced by positive audience reactions (e.g., laughter).

Presentations of higher body weight individuals in the media also reflect and reinforce negative stereotypes about larger persons (Ata & Thompson, 2010). Content analyses have found that overweight characters in television shows are more likely to be presented as unattractive, unintelligent, engaging in stereotypic eating behaviors, having fewer romantic partners, and having less positive interactions with friends (see Ata & Thompson, 2010). Studies also show that advertisements (e.g., diet products) and the news media often emphasize messages of individual responsibility and the modifiability of weight, thereby reinforcing the notion that obese people are lazy and weak-willed (McClure, Puhl, & Heuer, 2011).

Similar levels of stigmatization can be found in children's media as well. In an analysis of 1,221 cartoons, Klein and Shiffman (2005) found that thin characters were more often ascribed socially desirable traits (e.g., attractive, healthy), while heavier characters were ascribed socially disapproved traits (e.g., unintelligent, unhappy). Further results showed that overweight cartoon characters were more frequently shown engaging in stereotypic eating behaviors (e.g., eating junk food) and engaging in physical aggression (Klein & Shiffman, 2005). In another analysis of overweight characters on television networks for children (e.g., Disney Channel, Nickelodeon), Robinson, Callister, and Jankoski (2008) found that these characters were more likely to be shown having no friends when compared to average or below average weight characters. Thus the reinforcement of these negative weight stereotypes in the media begins early and continues into adult programming.

## Media Portrayals and Weight Attitudes

The justification-suppression model presents a useful framework for examining how these stigmatizing portrayals may bolster negative weight attitudes. The justification-suppression model posits that justifications for prejudice (e.g., negative stereotypes, attributions) allow individuals to effectively release negative attitudes that would have otherwise been suppressed (Crandall & Eshelman, 2003). Considering the aforementioned normative negative portrayals of higher body-weight individuals in the media, it can be argued that the media supplies individuals with sufficient justification for their weight-based prejudices. In other words, seeing larger individuals portrayed as lazy or overeating in the media might reinforce notions that body weight is personally controllable and thereby allow the individual to feel justified in their dislike of larger persons.

A number of studies have provided evidence for an association between media exposure and negative weight attitudes. Using a sample of early adolescent boys and girls, Latner, Rosewall, and Simmonds (2007) found that total media use (e.g., videogames, magazines, and television) was significantly related to negative attitudes toward obese boys and girls. Related, Domoff and colleagues (2012) found that, after viewing an episode of *The Biggest Loser* (a reality television show about overweight individuals and their weight-loss journeys), participants reported significantly higher levels of antipathy toward overweight individuals, and considered weight to be more controllable, when compared to a control condition (e.g., *Meerkat Manor*). Finally, Brochu, Pearl, Puhl, and Brownell (2014) found that participants who read a news story about a policy to deny fertility treatment to obese women that was accompanied by a

stigmatizing image of a higher body-weight couple were more likely to support said discriminatory policy when compared to participants who viewed the same news story accompanied by a non-stigmatizing image.

It has also been suggested that counter-stereotypic portrayals of higher body weight individuals might work to reduce negative weight attitudes through counterconditioning. The logic of counterconditioning is that negative stereotypes can be unlearned through the presentation of stereotype-incompatible (e.g., counter-stereotypical) associations (Gapinski, Schwartz, & Brownell, 2006). In other words, stereotype-incongruent information may slow social categorization processes and allow for the new (i.e., counter-stereotypic) information to be considered alongside old (i.e., stereotypic) information (Carels et al., 2013). This may in turn lead to changes in stereotypes and attitudes.

Counter-stereotypic information has successfully been used to reduce bias in a number of areas (e.g., age, race, gender; Blair, Ma, & Lenton, 2001; Dasgupta & Greenwald, 2001). For instance, Blair and colleagues (2001) were able to reduce implicit (i.e., not deliberately formed) gender stereotypes by having participants focus on counter-stereotypic attributes for females (e.g., strength). Further, recent studies in the field of racial bias reduction have also shown counter-stereotypic interventions to be successful at reducing implicit racial bias (Lai et al., 2014). It should be noted, however, that these effects appear to fade overtime and did not hold for explicit (i.e., deliberately formed) attitudes (Lai et al., under review).

In the area of weight bias, some studies have found that participants exposed to counter-stereotypic portrayals of heavier individuals report lower negative weight



attitudes. For instance, across two experiments, Pearl, Puhl, and Brownell (2012) found that participants who viewed counter-stereotypic images of obese models (e.g., selecting produce at a grocery store) reported lower explicit anti-fat attitudes and less explicit social distance attitudes when compared to participants who viewed stereotypic images of obese models (e.g., sitting on a couch eating junk food). Further, McClure, Puhl, and Heuer (2011) tested the effects of photographic portrayals of obese individuals (positive/flattering vs negative/unflattering), when paired with an identical news story, on anti-fat attitudes. Findings indicated that participants who viewed the negative/unflattering photographs reported significantly higher levels of negative explicit attitudes toward obese individuals when compared to participants in the positive/flattering photograph condition (McClure et al., 2011).

Other studies, however, have found no changes in negative weight attitudes following exposure to counter-stereotypic information. In a sample of university students, Harris, Walters, and Waschull (1991) found that participants who read interviews from high-status overweight persons (e.g., popular female undergraduate, popular undergraduate football player) did not report lower explicit negative weight attitudes when compared to those who read no interviews. In another study, Gapinski and colleagues (2012) had participants view a video of an obese person portrayed in a positive manner (e.g., as competent) and a video designed to evoke empathy for larger people. Results indicated that neither the positive portrayal nor the empathy-evoking video had any effect on implicit or explicit weight bias. Finally, using a within-subjects design, Flint, Hudson, and Lavalley (2013) found that viewing counter-stereotypical

images of obese members of the general public and obese celebrities failed to reduce explicit or implicit weight bias.

Also important to note, a number of these studies employed multiple intervention methods (e.g., empathy evocation, controllability of obesity information), in conjunction with counter-stereotypic content (Hague & White, 2005; Robinson, Bacon, & O'Reilly, 1993; Swift et al., 2013; Wiese, Wilson, Jones, & Neises, 1992). For example, Weise et al. (1992) administered a two-hour bias reduction intervention consisting of video (an attractive and articulate health professional sharing her struggles with weight and her experience with childhood weight-based teasing), written (reading a description of the causes of obesity), and small group discussion (about taking an obese person's perspective in potentially stigmatizing situations) components to a sample of medical students. Results indicated that participants in the intervention condition reported less explicit anti-fat attitudes five weeks later, and less individual blame for obesity one year later, when compared to participants in a control group (similar activities but non-obesity related; Weise et al., 1992). Similar decreases in explicit anti-fat attitudes were found in other studies employing counter-stereotypic exemplars alongside other strategies (Hague & White, 2005; Robinson et al., 1993). While these results appear promising, it is impossible to ascertain which intervention component was responsible for the attitude changes.

### **The Current Study**

The present study examined whether explicit or implicit weight attitudes are influenced by exposure to counter-stereotypic higher body-weight media models. This study is warranted because it will contribute to our understanding of how positive media

portrayals of higher body-weight individuals affect weight attitudes. While a handful of studies have examined this question, results have been mixed and measures have been inconsistent. This study examines weight bias more comprehensively by assessing implicit associations, explicit stereotypes, and explicit attitudes. This study also uses a video clip taken from an actual television show featuring a higher body-weight protagonist, rather than a video (or images) designed for a laboratory study, thus allowing for more real world implications to be drawn. We hypothesized that participants exposed to counter-stereotypically portrayed higher body-weight individuals would report lower explicit negative weight attitudes and stereotypes and would exhibit lower implicit weight bias when compared to participants in the control condition.

## **Method**

### **Participants**

Prior to data collection, it was determined that a sample size of 200 (100 per group) was needed to achieve a power of .80 for the planned analyses, with a medium effect size (.40) and an alpha of .05. A total of 258 participants were recruited through an online recruitment system at Rutgers University-Camden. Of these respondents, 28 were excluded due to incomplete data (e.g., errors in implicit bias scores, missing main outcome variables). The final sample consisted of 230 participants.

The average age for participants in this study was 19.46 years old ( $SD = 1.70$ , Range: 18-25) and 58.3% ( $n = 134$ ) were female. The mean body mass index (BMI) was 24.38 ( $SD = 3.92$ ; Range: 16.69-39.02), and using guidelines from the Centers for Disease Control and Prevention (CDC), participants were classified into the following weight categories: 2.2% underweight (BMI < 18.5), 61.7% normal weight (BMI 18.5-

24.9), 26.5% overweight (BMI 25-29.9), and 9.6% obese (BMI  $\geq$  30). The sample was ethnically diverse, with participants identifying as White (52%), Asian (20.9%), Black (20.1%), Hispanic (13.1%), Native American (2.2%), and/or other (2.6%).

### **Study Design**

**Procedure.** Participants were recruited through the university's student subject pool and received course credit for completion of the study. The study was advertised as research on the "Effects of the media on attitudes." After signing up for the study, participants were assigned a time to report to a designated lab space on campus. Once in the lab, trained research assistants obtained written consent, read a set of standardized instructions to each participant, and set each participant up on their own computer. All study measures were completed online and all data collection took place in the same lab. Participants were randomly assigned to either a treatment or control condition. After watching the approximately ten-minute video corresponding to their assigned condition, participants were asked to write a short description of the video they watched, completed an implicit association test, reported on their explicit weight bias, and provided demographic information. The explicit weight bias measures were counter-balanced. After completing all study measures, participants were weighed and had their height measured by a research assistant, were debriefed, and were thanked for their time. No participants exhibited any signs of psychological distress at any point during the study. All procedures were approved by the institutional review board of Rutgers University.

**Video clips.** Two video clips from television shows were edited to be approximately 10-minutes long. The treatment clip was taken from *Drop Dead Diva* (Season 2, Episode 3), a Lifetime Network show featuring a higher body-weight female

lawyer who is portrayed in a counter-stereotypic manner (e.g., smart, professional, attractive, energetic). This episode was chosen because it is representative of the show: It included the protagonist demonstrating her intelligence in the workplace and pursuing romantic interests. Discussions of weight or weight-related issues were not included in the clip to avoid evoking empathy or presenting information about the causes of obesity.

The treatment video clip was pretested with a sample of independent raters ( $N = 20$ ) to ensure the protagonist was perceived as overweight. The raters were asked to watch the treatment video clip and then rate the main protagonist's body weight (e.g., underweight, normal weight, overweight, or obese). Results indicated that 90% of the raters classified the protagonist in the treatment clip as being overweight or obese.

The control clip was taken from *Meerkat Manor*. *Meerkat Manor*, an Animal Planet show, features meerkats living in the Kalahari Desert. This show was chosen to serve as a neutral stimulus because it contained no human images and therefore would avoid eliciting body-related issues or thoughts.

## Measures

**Implicit association test.** Implicit weight bias was assessed using the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998). In this study, participants completed a computer-based weight version of the IAT. This task required them to classify positive words (*wonderful, pleasant, excellent, great*), negative words (*terrible, nasty, awful, despicable*), words describing thin people (*slim, thin, skinny, slender*), and words describing overweight people (*large, obese, fat, heavy*), as quickly and accurately as possible into social (*fat people, thin people*) and/or evaluative (*good, bad*) categories (Teachman & Brownell, 2001). In this study, participants completed seven rounds of

sorting: (1) good or bad; (2) fat people or thin people; (3) thin people/good or fat people/bad; (4) thin people/good or fat people/bad; (5) fat people or thin people; (6) fat people/good or thin people/bad; (7) fat people/good or thin people/bad. Stereotype-consistent and stereotype-inconsistent pairings were counter-balanced to minimize order effects. Scores were calculated using the improved scoring algorithm suggested by Greenwald, Nosek, and Banaji (2003). Higher scores indicate higher levels of implicit weight bias.

**Explicit weight bias.** A modified version of the dislike subscale of the Anti-fat Attitudes questionnaire (AFA; Crandall, 1994; Quinn & Crocker, 1999) was used to assess explicit weight bias. This 10-item subscale measures antipathy toward higher body-weight individuals (e.g., “I really don’t like fat people much.”). Each item was measured using a nine-point Likert scale ranging from *very strongly disagree* to *very strongly agree*, with higher scores indicating more antipathy. In this sample, Cronbach’s  $\alpha$  was .90.

The negative judgement subscale of the Universal Measure of Bias-Fat (UMB-Fat) was also used to assess explicit weight bias (Latner, O’Brien, Durso, Brinkman, & MacDonald, 2008). This five-item subscale measures negative judgement of higher body-weight individuals (e.g., “Fat people tend toward bad behavior.”). Each item was measured using a seven-point Likert scale where responses ranged from *strongly agree* to *strongly disagree*, with items coded so that higher scores indicated higher levels of negative judgement. Cronbach’s alpha for this sample was .79.

**Explicit stereotypes.** The shortened form of the Fat Phobia Scale was used to assess the degree to which individuals associate negative stereotypes with being

overweight (Bacon, Scheltema, & Robinson, 2001). This measure consists of 14 pairs of adjectives that might be used to describe overweight/fat people (e.g., “active/inactive,” “attractive/unattractive”) and is scored on a five-point semantic differential scale. Higher scores indicate greater levels of negative weight stereotyping. Alpha for this sample was .86.

**Demographic information.** Participants reported on their age, gender, ethnicity, level of education, and income. Height and weight information, measured in the lab, was used to calculate participant BMI ( $703 \times \frac{\text{weight (lbs)}}{\text{height(in)}^2}$ ).

### **Statistical Analyses**

All analyses were conducted using Stata v.14 for Windows (StataCorp LP, College Station, TX). All  $p$ -values  $< .05$  were considered statistically significant, and two-tailed  $p$ -values are reported for all hypothesis tests. Independent samples  $t$ -tests and Pearson’s  $\chi^2$ -tests were conducted to assess baseline differences between the treatment and control groups on relevant variables (e.g., age, BMI, gender). Bivariate correlations were used to examine the associations between demographic characteristics and outcome variables. Independent samples  $t$ -tests were used to test all study hypotheses. Linear regression models, using mean-centering for products, were used for all moderation tests.

Prior to analyses, the data were checked for missing values, data entry errors, and outliers. Participants missing a significant amount of data (e.g., a full outcome measure) were excluded from the study. No demographic patterns (e.g., gender, BMI, ethnicity) were found among those missing data. To assess for outliers, all relevant variables (e.g., outcome variables, BMI) were converted to standardized scores, and scores of  $\pm 3$  or

more were considered outliers (Tabachnick & Fidell, 2007). This analysis revealed no outliers, and thus no changes were made to the data.

## **Results**

### **Sample Characteristics**

An independent samples *t*-test revealed no significant difference between study conditions in participant BMI or age. In addition, Pearson's  $\chi^2$ -tests indicated groups did not significantly differ in terms of gender or race. Demographic characteristics, by total and by group, along with preliminary test statistics, are displayed in Table 3.

Participant BMI was significantly negatively related to all weight bias measures except negative judgement. Dislike, negative judgement, and stereotyping were all significantly associated with each other. There were no significant correlations between any of the explicit measures and implicit weight bias. Table 4 displays correlations between relevant study variables.

### **Effects of Condition on Bias and Moderation Analyses**

Independent samples *t*-tests were used to test for differences in implicit and explicit weight bias between the two conditions. Analyses revealed no significant differences for any of the weight bias variables. Moderation analyses also indicated that these effects were not conditional upon weight (BMI\*condition;  $p > .05$ ). Table 5 displays group means, standard deviations, *t*- and *p*-values, and effect sizes (Cohen's *ds*) for all comparisons.



Table 3

*Demographic Characteristics*

	Treatment ( <i>n</i> = 115)		Control ( <i>n</i> = 115)			Total ( <i>n</i> = 230)	
Characteristics	<i>n</i>	%	<i>n</i>	%	$\chi^2$ (df)	<i>N</i>	%
Female gender	66	57.4	68	59.1	.07(1)	134	58.3
Race/Ethnicity Categories							
White	60	53.1	59	51.3	.07(1)	119	52.2
Black	25	21.7	21	18.4	.39(1)	46	20.1
Asian/Pacific Islander	23	20	25	21.7	.11(1)	48	20.9
Hispanic	13	11.4	17	14.8	.57(1)	30	13.1
Native American/ American Indian	2	1.7	3	2.6	.20(1)	5	2.2
Other	4	3.5	2	1.7	.68(1)	6	2.6
	Mean	<i>SD</i>	Mean	<i>SD</i>	<i>t</i> (df)	Mean	<i>SD</i>
Age	19.67	1.74	19.25	1.64	-1.87(228)	19.46	1.70
BMI	24.31	3.57	24.45	4.26	.25(228)	24.38	3.92

Table 4

*Pearson's product moment correlations between relevant study variables (N = 230)*

	2	3	4	5	6
1. Gender <sup>a</sup>	-.09	.10	-.11	-.09	.04
2. BMI	--	-.18**	-.18**	-.03	-.15*
3. IAT		--	.10	-.04	.06
4. AFA			--	.55***	.36***
5. UMB				--	.23***
6. FP					--

<sup>a</sup> 0 = male, 1 = female

Note. IAT, implicit association test; AFA, anti-fat attitudes-dislike; UMB, universal measure of bias- negative judgement; FP, fat phobia

\*\*\**p*<.001 \*\**p*<.01 \**p*<.05

Table 5

*Means (SD) for total sample and by group for each outcome variable along with  $t$  values, significance levels, and effect sizes for group differences.*

Variables	Total ( $n = 230$ )	Treatment ( $n = 115$ )	Control ( $n = 115$ )	$t$ (df)	$P$	Effect size <sup>a</sup>
IAT	.48(.54)	.47(.53)	.49(.56)	.31(228)	.756	.04
AFA	2.78(1.22)	2.77(1.12)	2.79(1.32)	.09(228)	.930	.01
UMB	2.69(1.01)	2.60(.92)	2.78(1.08)	1.36(228)	.174	.18
FP	3.56(.58)	3.54(.51)	3.57(.64)	.43(228)	.665	.05

<sup>a</sup> Cohen's  $d$

*Note.* IAT, implicit association test; AFA, anti-fat attitudes-dislike; UMB, universal measure of bias- negative judgement; FP, fat phobia

## Discussion

The present study advances research in the field of weight bias and media effects by investigating a phenomenon that has received limited attention: Positive portrayals of higher body-weight individuals in the media. More specifically, this data suggests that exposure to a video clip featuring a counter-stereotypically portrayed higher body-weight protagonist does not have an effect on participants' implicit or explicit weight attitudes. As such, this study does not provide support for the effectiveness of counter-stereotypic information, or counterconditioning. Additionally, this study joins a growing body of literature documenting the intractable nature of negative weight attitudes (Dánielsdóttir, O'Brien, & Ciao, 2010; Lee, Ata, & Brannick, 2014).

These results are in line with other studies which have failed to find attitude changes following counter-stereotypic manipulations (Flint et al., 2013; Gapinski et al., 2012; Harris et al., 1991), yet contradict other studies which *have* found significant results (Carels et al., 2013; McClure et al., 2011; Pearl et al., 2012). One potential

explanation for these divergent findings could be the study designs. Carels et al. (2013), McClure et al. (2011), Pearl et al. (2012), and Brochu et al. (2014) all found significant effects when comparing stigmatizing and non-stigmatizing images. Flint et al. (2013) failed to find significant effects using a within-subjects design, Harris et al. (1991) compared a high-status overweight model to no model, and this study compared a non-stigmatizing portrayal to a neutral portrayal. Indeed, while Brochu et al. (2014) found significant differences between their non-stigmatizing and stigmatizing conditions, they did not find any significant differences when comparing their no image condition to their stigmatizing and non-stigmatizing conditions. Thus having a comparison group (i.e., stereotypical/stigmatizing image), rather than a neutral control group, may lead to more detectable effects through a dual process of decreasing attitudes in the non-stigmatizing group and increasing them in the stigmatizing group. While these explanations are speculative, they highlight the need for future research in this area to incorporate treatment, control, and comparison groups to disentangle these effects.

A second possible explanation for the lack of significant effects has to do with other elements of this study. This study was relatively short in duration, with only ten minutes of exposure to the counter-stereotypic content. Because effective attitude change is dependent upon the strength of the underlying message (Flint et al., 2013), future studies should aim to increase the length of exposure by using a longer clip or possibly extending the treatment across multiple sessions. Furthermore, clips that make weight more salient by directly addressing it might have a stronger impact on viewers' attitudes. Finally, having participants ruminate on, or discuss, weight-relevant aspects of the clip could also strengthen the effects.

This study is also limited by the fact that it is a posttest only design, thereby restricting the conclusions that can be drawn about the effects. Future studies should attempt to utilize more rigorous methods, such as pretest/posttest and longitudinal designs. These methods would allow for a better understanding of the actual degree of change occurring as a result of the treatment, as well as whether those changes persist overtime. The persistence of effects over time may be especially important considering recent evidence demonstrating that reductions in implicit racial bias fade overtime (e.g., a few hours to a day; Lai et al., under review).

An additional limitation is that the video clip used in this study may not have resonated with the participants. The clip featured a white, professional, higher body-weight female in her 30's, while the sample was comprised of young ( $M_{\text{age}} = 19.46$ ), ethnically diverse male and female students. Given that levels of weight stigmatization have been found to vary by race, ethnicity, and gender (Hebl, King, & Perkins, 2009; Puhl & Heuer, 2009), replication with media models of different genders and races could provide useful additional information. It should be noted here, though, that Pearl et al. (2012) used African American and Caucasian models, and male and female models, and found consistent bias reduction regardless of race or gender. Similarly, in the present study no differences were found for weight attitudes based on gender or race. Nevertheless, it is an important question to continue to explore.

Despite their statistical insignificance, these findings provide important information concerning the impact of counter-stereotypical media imagery on individual attitudes. Because results in this area have been mixed, it is important that studies continue to investigate the conditions under which these effects might occur. Namely,

what programmatic elements might have the largest effect on weight bias? For instance, the Elaboration Likelihood Model posits a number of variables that might influence the persuasiveness of a given message (e.g., personal relevance, argument quality; Petty, Briñol, & Priester, 2009). Furthermore, are there specific individual personality traits or social attitudes that make some people more amenable to these messages than others? For example, does need for cognitive closure, essentialist thinking, or authoritarian ideology, traits commonly associated with prejudice (Roets & Van Hiel, 2011), moderate the effect of media messages on attitude change? Given the documented negative consequences associated with weight stigmatization, alongside the high prevalence and social acceptability of negative weight attitudes, finding ways to harness the large scale potential impact of the mass media is important topic for future research to continue to pursue.

## Chapter 3

Imagine that! Counter-stereotypic mental imagery reduces weight bias

### **Abstract**

Higher body-weight individuals are highly stigmatized and face prejudice and discrimination across a number of domains. However, less is known about effective means for reducing negative weight attitudes. One strategy that has shown some success in bias reduction, yet has not been tested specifically for weight bias, is focused mental imagery. The purpose of this study was to investigate the effects of different types of mental imagery on explicit weight bias. Participants were randomly assigned to one of two experimental conditions or a control group. In the experimental conditions, participants were asked to imagine either a counter-stereotypic (e.g., confident, attractive) or stereotypic (e.g., unattractive, insecure) obese person. Explicit weight bias was measured using the Anti-fat Attitudes scale (i.e., dislike), the Universal Measure of Bias (i.e., social distance and negative judgement), and the Fat Phobia scale (i.e., weight-based stereotyping). Results indicated that participants in the counter-stereotypic condition, when compared to the stereotypic and control conditions, reported lower levels of dislike, negative judgement, and social distance attitudes. These findings highlight the potential usefulness of counter-stereotypic focused mental imagery to reduce explicit weight bias.

### **Background**

Weight bias is highly prevalent in many Western countries, and furthermore individuals who are stigmatized due to their weight experience numerous negative physical, psychological, and social consequences. These consequences include body dissatisfaction, low self-esteem, anxiety, depression, and suicidal ideation (see Puhl et al.,

2015; Puhl & Suh, 2015). Findings from a number of recent studies also demonstrate that weight stigma contributes to behavioral and health outcomes that tend to exacerbate obesity (e.g., exercise avoidance, binge eating, chronic stress, sleep disturbance; see Puhl & Suh, 2015). Finally, Sutin, Stephan, and Terracciano (2015) found that experiences of weight discrimination were associated with a 60% increase in mortality risk after controlling for other common physical and psychological risk factors.

Given the significant consequences associated with experiences of weight bias, strategies for reducing these negative attitudes are greatly needed. Reviews of the literature have found mixed evidence for the effectiveness of weight bias reduction interventions (Dánielsdóttir, O'Brien, & Ciao, 2010; Lee, Ata, & Brannick, 2014). For instance, studies aimed at reducing weight bias by increasing participant knowledge about the causes of obesity have been successful in shifting participant perceptions about the controllability of weight, but not in reducing negative weight attitudes (see Dánielsdóttir et al., 2010). Other studies testing strategies such as evoking empathy (Gapinski, Schwartz, & Brownell, 2006) or perspective taking (Skorinko & Sinclair, 2013) have similarly shown no reduction in negative weight attitudes. Considering the relative ineffectiveness of these approaches, studies testing new weight bias reduction strategies are greatly needed. The present research contributes to the weight bias reduction literature by testing the efficacy of a novel approach to weight bias reduction: Counter-stereotypic mental imagery.

### **Mental Imagery and Imagined Intergroup Contact**

Mental imagery refers to the intentional act of creating a mental representation of something (e.g., person, event, thing) by imagining it with the 'mind's eye' (Blair, Ma, &

Lenton, 2001). Research suggests that mental imagery has many of the same characteristics as real experience (e.g., concrete details, causal sequences) and thus may have a strong impact on decision-making, learning, and behavior (Dadds, Bovbjerg, Redd, & Cutmore, 1997). The mechanism through which mental imagery exercises are posited to work may most clearly be explained through the availability heuristic. This availability heuristic is a mental shortcut wherein judgements are influenced by information that is more readily or easily called to mind. Specifically applied to mental imagery, creating mental representations of people, places, things, or events may increase the accessibility of those specific knowledge structures in the mind and thereby increase the strength of their influence over judgments and behaviors (Carroll, 1978).

A number of studies have provided evidence for the effects of mental imagery on attitudes, beliefs, and behaviors (Taylor, Pham, Rivkin, & Armor, 1998). For example, Gregory, Cialdini, and Carpenter (1982) found that having participants imagine being arrested for a crime, or winning a contest, resulted in those participants believing more strongly that the event could happen to them. Further, Pham and Taylor (1999) found that participants who mentally simulated the process of studying for a midterm each day (for 5-7 days before the midterm) did significantly better on the exam, and studied more hours, than participants who did not simulate the process of studying for the exam (e.g., no imagery control, imagined desired outcome only comparison group). Finally, Blair et al. (2001) found that counter-stereotypical mental imagery, when compared to a variety of control/comparison groups (e.g., neutral, no imagery, stereotypic), reduced implicit gender stereotypes across five experiments.



Similar to mental imagery, imagined intergroup contact also draws upon mental simulations to change attitudes and behaviors. Intergroup contact theory posits that intergroup contact can effectively reduce prejudice and improve intergroup relations (Allport, 1954; Pettigrew, 1998). Indeed, a meta-analysis of 713 independent samples found support for the positive effect to of intergroup contact on prejudice (Pettigrew & Tropp, 2006). Turner, Crisp, and Lambert (2007) extended the concept of intergroup contact, previously comprised of direct and extended contact, to include imagined contact (i.e., mentally simulated interactions with outgroup members). Across three experiments, Turner et al. (2007) found that imagining contact with outgroup members (e.g., homosexual people, the elderly) improved attitudes toward that group. Other studies have supported the efficacy of imagined intergroup contact, finding this strategy to be successful for improving outgroup perceptions (Stathi & Crisp, 2008) and enhancing future contact intentions (Husnu & Crisp, 2010).

The application of imagined intergroup contact to weight bias reduction is sparse. In two experiments using undergraduate students in the UK, Turner, Wildschudt, and Sedikides (2012) found that participants who recalled a nostalgic ("sentimental longing for the past") interaction with a higher body-weight person, compared with participants who imagined an ordinary interaction with a higher body-weight person, reported more favorable attitudes toward overweight individuals. Conversely, Koball and Carels (2015) found that while direct contact with a higher body-weight individual resulted in reduced weight bias and increased behavioral intentions, imagined contact with a higher body-weight individual (vs. a no interaction task) had no impact on bias. The present study

adds to this limited body of work on mental simulations and weight bias reduction, in particular through the use of counterconditioning.

### **Counterconditioning and Bias Reduction**

There is growing evidence for the use of counterconditioning as a strategy for bias reduction. The logic of counterconditioning is that negative stereotypes can be unlearned through the presentation of stereotype-incompatible (e.g., counter-stereotypical) information (Gapinski et al., 2006). Counter-stereotypic information has been used to reduce bias in a number of areas including age, race, and gender (Blair et al., 2001; Dasgupta & Greenwald, 2001). For instance, Dasgupta and Greenwald (2001) reduced implicit racial bias using counter-stereotypic presentations of admired Black individuals (e.g., Martin Luther King Jr.) and disliked White individuals (e.g., Jeffrey Dahmer). In a second similar experiment, Dasgupta and Greenwald (2001) used images of admired older individuals (e.g., Mother Theresa) and disliked younger individuals (e.g., Tonya Harding) to reduce implicit age-related bias. Further, as was mentioned above, Blair and colleagues (2001) were able to reduce implicit gender stereotypes by having participants focus on counter-stereotypic attributes for females (e.g., strength).

Other studies have found mixed results for the effectiveness of counter-stereotypic information. For example, a recent study by Lai et al. (2014) reported the results of a research contest held to test the effectiveness of various experimental interventions on the reduction of implicit racial bias (specifically preference for Whites compared with Blacks). Seventeen different intervention strategies were compared in this contest, eight of which proved to be effective at reducing implicit racial bias. Among the most effective interventions in the contest was a vivid counter-stereotypic scenario. In this scenario,

participants imagined being assaulted by a White man and subsequently being rescued by a Black man. Across four studies, this method was shown to produce substantial implicit racial bias reductions ( $.24 \geq ds \leq .75$ ; Lai et al., 2014). In a follow-up study, however, Lai et al. (under review) found that these effects, while initially successful, may fade over time (e.g., after a few hours or a day). Furthermore, the counter-stereotypic interventions tested by Lai et al. (under review) failed to reduce explicit racial prejudice.

Specific to weight bias, a handful of studies have found positive effects for the use of counter-stereotypic information to reduce negative weight attitudes (Hague & White, 2005; Pearl, Puhl, & Brownell, 2012; Robinson, Bacon, & Reilly, 1993; Wiese, Wilson, Jones, & Neises, 1992). For example, Pearl, Puhl, and Brownell (2012) found that participants who viewed counter-stereotypic images of obese models (e.g., selecting produce at a grocery store) reported lower levels of explicit anti-fat attitudes when compared to participants who viewed stereotypic images of obese models (e.g., sitting on a couch eating junk food). Further, Brochu, Pearl, Puhl, and Brownell (2014) found that participants who read a news story about a policy to deny fertility treatment to an obese women that was accompanied by a non-stigmatizing image (e.g., an obese couple sitting on a bench holding hands) were less likely to support said discriminatory policy when compared to participants who viewed the same news story accompanied by a stigmatizing image (e.g., an obese couple sitting on a couch eating junk food).

Results from other studies, however, indicate no difference in levels of weight bias following exposure to counter-stereotypic information (Flint, Hudson, & Lavalley, 2013; Gapinski et al., 2006; Harris, Walters, & Waschull, 1991). For example, Flint et al. (2013) found no reduction in levels of implicit or explicit weight bias after viewing

counter-stereotypical images of high body-weight members of the general public or higher body-weight celebrities. In another study using a video showing positive portrayals of higher body-weight individuals and a video designed to evoke empathy for higher body-weight persons, Gapinski et al. (2006) found that neither video had any effect on implicit or explicit weight bias.

Taken together, these studies highlight the equivocality of the evidence for counter-conditioning as a strategy for weight bias reduction. Because none of the aforementioned studies were successful in reducing implicit weight bias, the extant evidence seems to suggest that counter-conditioning may be more effective for reducing explicit rather than implicit weight bias. It should be noted, however, that both Flint et al. (2013) and Gapinski et al. (2006) found no explicit weight bias reduction. Also important to note is that a number of the studies that found explicit bias reduction employed multiple intervention methods (empathy evocation, controllability of obesity information, etc.) in conjunction with the counter-stereotypical content (Hague & White, 2005; Robinson et al., 1993; Wiese et al., 1992), thereby making it impossible to discern which treatment produce the results. Pearl et al. (2012) and Brochu et al. (2014) are the exceptions, as they only tested counter-stereotypic information. Thus further testing to more fully understand the effects of counter-stereotypic information on weight bias is needed.

### **Present Research**

The present study examined the effects of counter-stereotypic and stereotypic mental imagery, when compared to a neutral control group, on levels of explicit weight bias. I hypothesized that participants in the counter-stereotypic condition would report lower levels of dislike and negative judgement of higher-body weight individuals when

compared to the stereotypic and control conditions. Further, because the manipulation involves imagined interactions with a counter-stereotypic/stereotypic obese person, I expected that participants in the counter-stereotypic condition would report less social distance attitudes (e.g., “I would be comfortable having a fat person in my group of friends;” Latner, O’Brien, Durso, Brinkman, & MacDonald, 2008) when compared to the stereotypic or control groups. Finally, I expected that the stereotypic group would report significantly higher explicit weight bias when compared to the control group.

## **Method**

### **Participants**

Participants were recruited through Amazon.com’s mechanical Turk (mTurk) service. Approximately 471 individuals responded to the Human Intelligence Task posted in the mTurk marketplace and began the survey. Of these respondents, 98<sup>3</sup> participants were excluded from analyses due to incomplete data. Another 44 participants were excluded from analyses due to failure to pass the experimental and instructional manipulation checks (manipulation check criteria described below; see Figure 1 for study flow details).

The final sample consisted of data from 329 participants. The average age was 22.67 years ( $SD = 1.89$ , Range 18-25), and 53.2% ( $n = 175$ ) were female. A majority of the participants identified as White (79.4%,  $n = 263$ ), with the remainder identifying as Asian (10.9%,  $n = 36$ ), Black (8.5%,  $n = 28$ ), Hispanic (5.8%,  $n = 19$ ), Native American

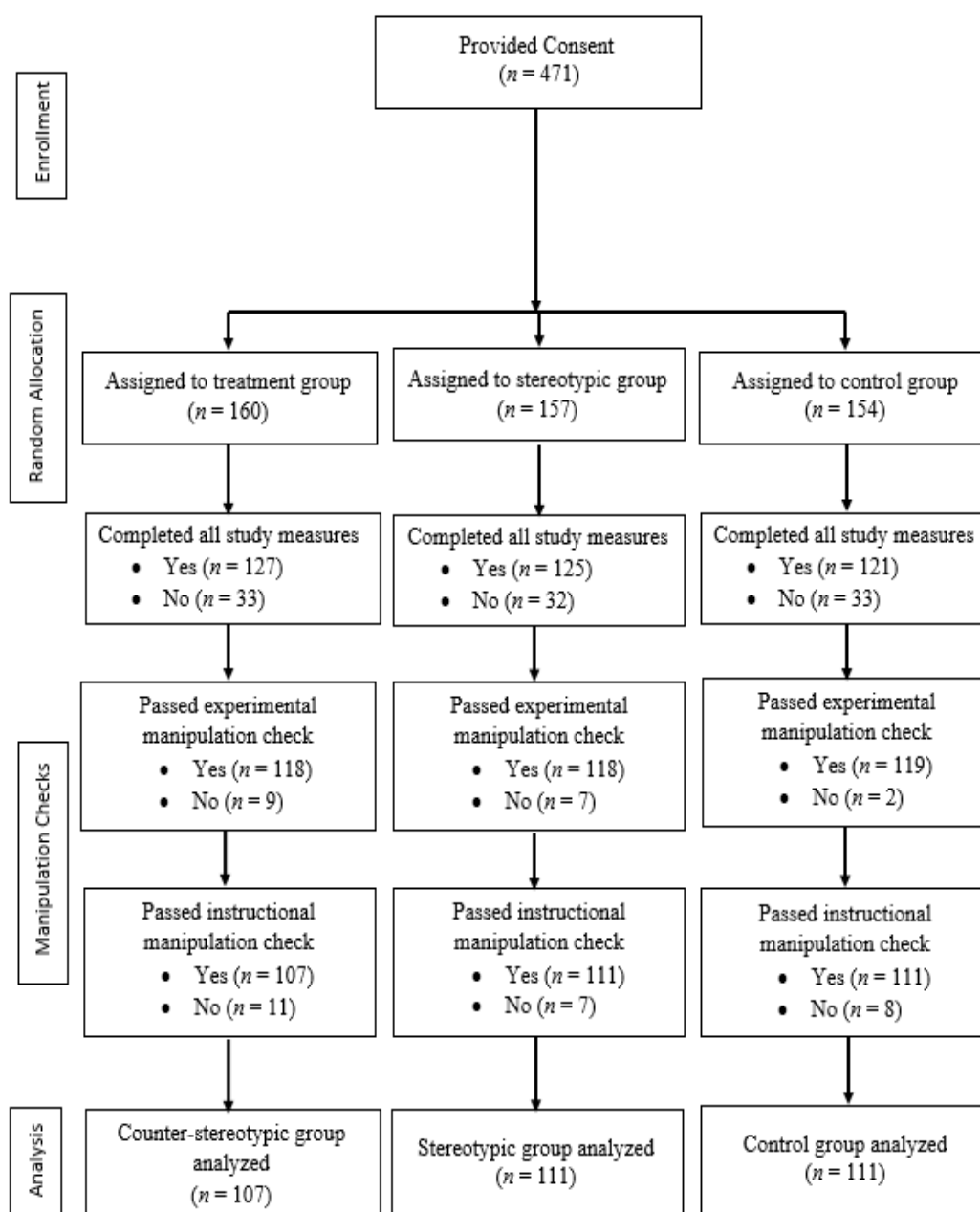
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<sup>3</sup> There was not enough consistent data on these participants to determine why they discontinued the study. Because numbers were fairly consistent across conditions, I would speculate that it was not due to the nature of the manipulation, but instead something with the length of the survey, computer issues, etc.

(1.2%,  $n = 4$ ), and/or other (0.9%). Based on participants' self-reported heights and weights, the mean body mass index (BMI) was 25.16 ( $SD = 5.47$ ; Range 16.69-55.12).

Figure 1

*Study Flow*



## Procedure

Participants were recruited using Amazon.com's mechanical Turk service. MTurk is an online data collection source that has been found to produce reliable data from diverse participants (Brochu et al., 2014; Buhrmester, Kwang, & Gosling, 2014). In order to participate in the study, mTurk workers had to live in the United States. Participants were compensated \$0.50 for completion of the study. The Human Intelligence Task (HIT) placed in the mTurk marketplace described the study as an "interesting mental imagery task followed by questions about your attitudes and beliefs." After consenting, participants were randomly assigned to one of three mental imagery conditions: counter-stereotypic, stereotypic, or a neutral control. After completing the mental imagery exercise and accompanying written response, participants completed the weight bias measures and provided demographic information. The weight bias measures were counter-balanced. After all study measures were completed, participants were debriefed, thanked for their time, and given a code to receive their compensation. All procedures were approved by the institutional review board of Rutgers University.

**Counter-stereotypic condition.** Following the counter-stereotypic manipulation used by Blair et al. (2001), participants in the counter-stereotypic (CS) condition read the following instructions:

Please take a few minutes and imagine a strong, confident, attractive obese person. How does this person look? How would you see yourself interacting with this person? What would you talk about? What kind of activities would you do together? Take a minute to close your eyes and picture this image.

Participants were then asked to provide a detailed description of the mental image they created in an adjacent text box.

**Stereotypic condition.** Participants in the stereotypic (S) condition were given instructions identical to those in the CS condition, with the exception being they were asked to imagine a “weak, insecure, unattractive obese person.”

**Control condition.** Participants in the control condition read the following instructions:

Please take a few minutes and imagine a vacation in the Caribbean. What would this place look like? What would people do there? What would make it a true vacation? What kind of activities would you do there? Take a minute to close your eyes and picture this image.

Participants were then asked to provide a detailed description of the mental image they created in an adjacent text box.

## Measures

**Explicit weight bias.** A 10-item modified version of the dislike subscale of the Anti-fat Attitudes scale (AFA; Crandall, 1994; Quinn and Crocker, 1999) was used to assess participants’ antipathy toward higher body-weight individuals (e.g., “I don’t like fat people much”). Each item was measured using a 9-point Likert scale from *very strongly disagree* to *very strongly agree*, with higher scores indicating more explicit antipathy toward overweight individuals. Cronbach’s  $\alpha$  for this sample was .95.

The Universal Measure of Bias (UMB) was also used to measure explicit weight bias (Latner et al., 2008). The UMB has been found to have good internal consistency and convergent validity (Latner et al., 2008). Responses were measuring on a 7-point



Likert scale ranging from *strongly agree* to *strongly disagree*. The UMB-FAT has subscales to assess negative judgment, social distance, attraction, and equal rights. Based on relevance for this study, only the negative judgment (e.g., “Fat people tend toward bad behavior”) and social distance (e.g., “I would not want to have a fat person as a roommate”) subscales were used. Responses were coded so that higher scores indicated higher levels of bias. Cronbach’s alphas for the negative judgement and social distance subscales were .84 and .77 respectively.

**Weight-based stereotypes.** The Fat Phobia Scale (shortened form) is a reliable and valid measure which assesses individual’s tendency to attribute various stereotypes to higher body-weight persons (Bacon, Scheltema, & Robinson, 2001). This measure presents 14 pairs of adjectives frequently used to describe higher body-weight individuals (e.g., “active/inactive,” “attractive/unattractive”) using a 5-point semantic differential scale. In this measure, higher scores indicate more frequent attribution of negative stereotypes to higher body-weight persons. Alpha for this sample was .90.

**Instructional manipulation check.** An instructional manipulation check was used to determine whether participants were diligently reading all study instructions (Oppenheimer, Meyvis, & Davidenko, 2009). This check instructed participants to respond “No Answer” to the question “How long do you believe this survey was?” and to write “I read the instructions” in the comment box that followed.

**Demographic information.** Participants were asked to report their age, gender, height, weight, ethnicity, level of education, and income. Height and weight information was used to calculate participant BMI ( $703 \times \frac{\text{weight (lbs)}}{\text{height(in)}^2}$ ).

## Statistical Analyses

All analyses were conducted using Stata v.14 for Windows (StataCorp LP, College Station, TX). All  $p$ -values  $< .05$  were considered statistically significant, and two-tailed  $p$ -values are reported for all hypotheses tests. One-way ANOVAs and Pearson's  $\chi^2$ -tests were conducted to assess baseline differences between the treatment and control groups on relevant variables (e.g., age, BMI, race, gender). Independent samples  $t$ -tests were used to test for differences in main outcome variables based on gender. Bivariate correlations were used to examine the associations between demographic characteristics and outcome variables. To test condition effects on explicit weight bias, one-way between subjects ANOVAs were used. Tukey's HSD was used to control for error rate in all post hoc pairwise comparisons. All moderation analyses use mean-centered predictor variables.

Data were initially assessed for entry errors, missing values, and outliers. No missing data or entry errors were found. To assess for outliers, all relevant variables (e.g., outcome variables, BMI) were converted to standardized scores. Scores greater than  $\pm 3$  standard deviations were considered outliers (Tabachnick & Fidell, 2007). This analysis revealed no outliers indicative of erroneous data, and therefore no changes to the data were made.

## **Results**

### **Manipulation Checks**

The written response to the mental imagery exercise provided by participants served as an experimental manipulation check. Overall, participants did not appear to have much difficulty producing images corresponding to their assigned condition (e.g., CS: "He is considered strong and confident because he is very happy and outgoing. He

does not shy away from anyone or anything,”). Participants who refused to comply with the prompt (e.g., CS: “A person cannot be both attractive and obese. That is like saying imagine a good-looking ugly person;” S: “I wouldn’t judge an individual based on their looks alone. Never judge a book by its cover”), or who did not enter any relevant text into the box, were dropped from analyses ( $n = 22$ ). Additionally, participants who failed to correctly respond to the instructional manipulation check (e.g., mark ‘No Answer’ *and* write “I read the instructions;”  $n = 26$ ) were also dropped from analyses (see Figure 1 for study flow). No demographic patterns emerged among the dropped data.

### **Sample Characteristics**

Groups did not differ on demographics following randomization. One-way ANOVAs revealed no significant differences between study conditions in participant BMI or age. In addition, Pearson’s  $\chi^2$ -tests indicated groups did not significantly differ in terms of gender or race. Demographic characteristics and preliminary analyses test statistics are displayed in Table 6.

Further results indicated that males and females significantly differed on the main outcome variables. Males reported significantly higher levels of dislike, negative judgement, and social distance (all  $t$ s  $> 3.29$ ,  $ps < .001$ ) across all groups. BMI was significantly related to all of the outcome variables. Further, all of the outcome variables were significantly associated with each other. Thus BMI and gender are examined as moderators and included as covariates with the outcomes of interest. Table 7 displays bivariate correlations for all main outcome variables and BMI.

Table 6

*Demographic Characteristics*

	CS ( <i>n</i> = 107)		S ( <i>n</i> = 111)		Control ( <i>n</i> = 111 )			Total ( <i>n</i> = 329)	
Characteristics	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	$\chi^2$ (df)	<i>N</i>	%
Female gender	59	55.1	53	47.6	63	56.7	2.05(2)	175	53.2
Race/Ethnicity									
Categories									
White	87	81.3	92	82.9	84	75.7	1.98(2)	263	79.4
Black	9	8.4	11	9.9	8	7.2	.52(2)	28	8.5
Asian	10	9.4	12	10.8	14	12.6	.60(2)	36	10.9
Hispanic	8	7.5	4	3.6	7	6.3	1.59(2)	19	5.8
Native	1	.93	1	.90	2	1.8	.48(2)	4	1.2
American/ American Indian									
Other	2	1.87	0	0	1	.90	2.11(2)	3	.91
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>F</i> (df)	<i>M</i>	<i>SD</i>
Age	22.90	1.77	22.60	1.81	22.50	2.07	1.38(2)	22.67	1.89
BMI	25.79	5.65	24.90	4.99	24.81	5.73	1.08(2)	25.16	5.47

Table 7

*Correlations between Study Variables (N=329)*

	1	2	3	4	5
1. BMI	--	-.18***	-.17**	-.22***	-.11*
2. AFA		---	.68***	.73***	.28***
3. NJ			--	.70***	.22***
4. DIS				--	.23***
5. FP					--

*Note.* AFA, antifat attitudes-dislike; NJ, universal measure of bias-negative judgement; DIS, universal measure of bias- distance; FP, fat phobia

\*\*\**p*<.001 \*\**p*<.01 \**p*<.05

### Condition Effects for Explicit Weight Bias

Table 8 displays means and standard deviations for all outcome variables by condition. Overall models revealed significant differences between groups for dislike ( $F(2, 326) = 11.86, p < .0001$ ), negative judgement ( $F(2, 326) = 10.77, p < .0001$ ), and social distance, ( $F(2, 326) = 6.79, p = .001$ ). No significant differences were found for stereotyping ( $F(2, 326) = 1.29, p = .277$ ). Post hoc Tukey HSD pair-wise comparisons revealed that participants in the counter-stereotypic condition reported lower dislike scores than in the control ( $t(216) = 3.95, p < .0001, d = .53$ ) and stereotypic ( $t(216) = 4.50, p < .0001, d = .61$ ) conditions. Similarly, participants in the counter-stereotypic condition reported lower negative judgment scores than in the control ( $t(216) = 3.91, p < .0001, d = .53$ ) and stereotypic ( $t(216) = 4.27, p < .0001, d = .58$ ) conditions. Participants in the counter-stereotypic condition also reported lower social distance scores compared to the control ( $t(216) = 2.81, p = .018, d = .38$ ) and stereotypic ( $t(216) = 3.44, p = .001, d = .47$ ) conditions. No significant differences were found between the stereotypic and control conditions for dislike, negative judgement, or social distance (all  $ps > .703$ ). Additional analyses revealed that neither BMI, gender, nor the interaction of BMI and gender moderated any of the main effects (all interaction  $ps > .05$ ).

Table 8

*Weight Bias Means and Standard Deviations by Condition*

	Total ( <i>N</i> = 329) <i>M</i> ( <i>SD</i> )	CS ( <i>n</i> = 107) <i>M</i> ( <i>SD</i> )	S ( <i>n</i> = 111) <i>M</i> ( <i>SD</i> )	Control ( <i>n</i> = 111) <i>M</i> ( <i>SD</i> )
AFA	3.92(1.75)	3.27(1.66) <sup>a</sup>	4.3(1.70) <sup>b</sup>	4.18(1.71) <sup>b</sup>
NJ	3.12(1.13)	2.72(1.02) <sup>a</sup>	3.34(1.14) <sup>b</sup>	3.29(1.12) <sup>b</sup>
DIS	3.15(1.09)	2.84(1.05) <sup>a</sup>	3.35(1.14) <sup>b</sup>	3.24(1.03) <sup>b</sup>
FP	3.68(.67)	3.62(.60)	3.76(.67)	3.66(.75)

*Note.* AFA, antifat attitudes-dislike; NJ, universal measure of bias-negative judgement; DIS, universal measure of bias-social distance; FP, fat phobia

<sup>a</sup>Significantly different from Stereotypic. <sup>b</sup>Significantly different from the Counter-Stereotypic.

## Discussion

I carried out this study with the aim of testing a new weight bias reduction strategy: Counter-stereotypic mental imagery. Results from this study demonstrate the positive effects of counter-stereotypic mental imagery on explicit weight bias. Specifically, these results indicate that, when compared to both a control condition and stereotypic condition, counter-stereotypic mental imagery results in reduced dislike of, negative judgement of, and social distance attitudes toward higher body-weight individuals.

These results are in line with results from similar studies (Turner et al., 2012), but at odds with others (Koball & Carels, 2015). The divergence of these effects for imagined contact on weight bias reduction can potentially be explained by two factors: The valence and the vividness of the scenario. First, research suggests positive contact situations, rather than neutral contact situations, are more effective at improving intergroup relations (Stathi & Crisp, 2008). Koball and Carels (2015) used a neutral imagined contact

condition (e.g., imagine meeting an overweight stranger and learning “interesting and unexpected things”), while Turner et al. (2012) used a scenario specifically designed to evoke positive affect (e.g., nostalgia). The manipulation in this study, being counter-stereotype focused, was also intended to conjure more positive feelings. Thus the positive valence of this study and Turner et al. (2012) could explain the successful bias reduction.

Second, research suggests that imagined contact scenarios that are more vivid and elaborate may result in enhanced bias reduction (Husnu & Crisp, 2010). The scenario used by Turner et al. (2012) was much more elaborate (e.g., included more details, more vivid visualization) than the one used by Koball and Carels (2015). Turner et al. (2012) instructed participants to “Try to think of a past event involving an overweight person that makes you feel nostalgic... Try and immerse yourself into this nostalgic event, remembering what it was like and how you felt at the time” (p.131), while Koball and Carels (2015) instructed participants to “Take a few minutes to imagine yourself meeting this stranger for the first time (picture of overweight confederate). During the conversation, imagine you found out some interesting and unexpected things about the stranger” (p. 300). The counter-stereotypic mental imagery exercise used in this study is more similar to the manipulation used in Turner et al. (2012) in terms of its vividness, and thus this factor is also a possible explanation for the significant bias reduction.

Taken together, these results suggest effective mental simulations for shifting negative weight attitudes may need to be positive and/or elaborate to result in attitudinal change. Future research should attempt to disentangle these processes to determine which aspect of the scenario (e.g., valence, vividness) is driving the effect. For instance,

comparing positive but not elaborate scenarios, neutral elaborate scenarios, and neutral non-elaborate scenarios in a single study.

This study also found no difference between the stereotypic and neutral conditions. These results are surprising in that they suggest that either a) stereotypic mental imagery does not result in greater weight bias when compared to a neutral control, or b) negative weight attitudes are already so prevalent that they set the base-level for thinking about overweight individuals. Future research should attempt to clarify these effects by using a pretest/posttest design to measure degree of attitude change following the interventions. Furthermore, because some studies have emphasized the importance of understanding the effects of negative intergroup contact situations on prejudice (Barlow et al., 2012; Graf, Paolini, & Rubin, 2014), studies should continue to include conditions such as these.

Future studies in this area should also examine potential mediators and moderators of these relationships. For instance, the intergroup contact literature posits that intergroup anxiety frequently mediates the relationship between contact and prejudice, wherein reduced anxiety leads to reduced prejudice (Dhont & Hodson, 2015). Indeed, Koball and Carels (2015) found that intergroup anxiety mediated the relationship between direct contact and explicit weight bias. Another potential mediating path, inducing positive affect (e.g., empathy), has also been supported in the intergroup contact literature but not yet tested for imagined intergroup contact and weight bias (Pettigrew & Tropp, 2006).

Research has also identified a number of personality factors (e.g., openness to experiences, extraversion), ideologies (e.g., social dominance orientation, right-wing



authoritarianism), and cognitive constructs (e.g., need for closure) that may hinder or facilitate the reduction of prejudice (see Hodson & Dhont, 2015). For instance, Dhont, Roets, and Van Hiel (2011) found that need for cognitive closure (NFC), a measure which closely approximates Allport's (1954) 'prejudiced personality,' moderated the relationship between intergroup contact and prejudice (e.g., subtle, modern, and blatant racism). That is, for persons higher in dispositional NFC, and therefore more likely to strongly adhere to their existing attitudes, intergroup contact had a stronger association with reduced levels of prejudice (Dhont et al., 2011). These results are in line with other studies demonstrating the effectiveness of intergroup contact on bias reduction for individuals high in right-wing authoritarianism and social dominance orientation (Dhont & Van Hiel, 2009). Thus intergroup contact may have a broader appeal in that it is effective for even the most prejudice-prone personalities (Hodson, 2011). Future research is needed, however, to examine these variables in the specific context of weight bias.

This study has a number of important limitations to consider. One potential limitation of this research was that it was conducted online, and thus potential threats to internal validity were numerous. While attempts were made to control for this (manipulation checks, data checks), there is still a possibility that factors other than the study treatment could have affected participants' responses. Additionally, this study employed a posttest only design and is therefore limited in claims that can be made about bias reduction. Future research should employ more rigorous study designs (pretest/posttest) to better assess degree of attitude change. It is also unclear how long the attitude changes achieved through this intervention might last. Longitudinal designs are

needed to determine the effectiveness of these types of interventions for long-term bias reduction.

These findings have important interventional implications. This study found evidence for the preliminary effectiveness of a relatively simple and efficient bias reduction method, counter-stereotypic mental imagery. This method is easier to implement than many other strategies (e.g., intergroup contact, modifying social consensus beliefs), and therefore holds potential for larger scale implementation. These results, alongside similar others (Turner et al., 2012), also provide important information about the types of imagined contact or mental imagery scenarios that could potentially be more impactful (i.e., positive and/or elaborate scenarios). Given the current associations between weight bias and negative health outcomes, interventions such as these are necessary to improve the general health and well-being of the higher body-weight individuals and the population overall.

## Chapter 4

You have to love yourself first? Examining the effectiveness of a body gratitude intervention to reduce negative weight attitudes and internalized weight bias

### **Abstract**

Weight bias is associated with a number of negative consequences. Furthermore, the internalization of negative weight attitudes has been identified as an important predictor of psychological distress, disordered eating, and exercise avoidance. Drawing on social comparison theory, anti-fat attitudes are suggested to be rewarding because they allow individuals to feel better about their own bodies through the negative appraisal of others' bodies. The present study tested the hypothesis that body image improvement, through a brief body gratitude exercise, would lead to a reduction in both negative weight attitudes and internalized weight bias. Results indicated that the treatment was effective at reducing weight bias internalization, yet did not result in lower levels of explicit weight bias. This study demonstrates the effectiveness of a body gratitude exercise for reducing internalized weight bias, and suggests further research is necessary to understand the psychological underpinnings of weight bias.

### **Background**

Negative attitudes toward higher body-weight individuals are common, relatively socially acceptable, and harmful. Higher body-weight individuals may encounter weight bias at school, at work, in the home, and in health care settings as well as from parents, peers, romantic partners, teachers, and health care providers (see Puhl & King, 2013). Further, experiences of weight bias have been shown to be associated with a number of deleterious consequences including low self-esteem, body dissatisfaction, depression,

anxiety, eating disorders, unhealthy weight-control behaviors, exercise avoidance, binge eating, sleep disturbance, and higher cortisol (see Puhl & Heuer, 2009; Puhl & Suh, 2015).

In addition to the consequences associated with experiences of weight bias, there is an increasing amount of evidence demonstrating the negative consequences of internalized, or self-directed, weight stigma. Studies have shown internalized weight bias to be consistently correlated with body image disturbance and eating pathology (Pearl & Puhl, 2014; Pearl, White, & Grilo, 2013). For instance, Vartanian and Novak (2011) found that individuals who endorsed anti-fat attitudes and internalized weight bias were more likely to avoid exercise. Relatedly, O'Brien and colleagues (2016) found that weight bias internalization (and psychological distress) mediated the relationship between experiences of weight stigma and disordered eating. Finally, Pearl and Puhl (2016) found that participants assigned to focus specifically on internalizing weight bias (e.g., think/write about a time you had feelings of self-blame/worthlessness because of your weight) reported lower self-esteem and positive affect and more negative affect when compared to participants instructed to focus on experiencing weight bias (e.g., think/write about a time you experienced unfair treatment due to your weight). Taken together, these negative consequences suggest efforts should be made to address both societal weight stigma *and* internalized weight stigma (Logel, Stinson, & Brochu, 2015).

Although much is known about the consequences of experiencing and/or internalizing weight stigma, less is known about effective ways to reduce these attitudes. In a review of published studies on weight bias reduction interventions, Daníelsdóttir, O'Brien, and Ciao (2010) found mixed evidence for the effectiveness of these

interventions. Whereas the authors found some methods (e.g., social consensus-based approaches) to be more effective than others (e.g., information about causes of obesity), in general they argued that the development of successful bias reduction strategies requires a better understanding of the psychological factors underpinning weight bias. Similarly, in a more recent meta-analysis of 30 studies, Lee, Ata, and Brannick (2014) found evidence for a small but positive effect of weight bias reduction interventions on negative weight attitudes and beliefs. The authors found that methods fitting the dominant paradigm for weight bias reduction (e.g., manipulating controllability beliefs, invoking empathy) were on average no more effective than other types of interventions, thus also suggesting a need for testing novel bias reduction strategies and furthering our knowledge of the psychological underpinnings weight bias. One of these underlying factors presented as potentially playing an important role in the etiology of negative weight attitudes is one's own body image (Dánielsdóttir et al., 2010, O'Brien et al., 2009). The present study tests this theory by attempting to reduce negative weight attitudes indirectly through a body image improvement intervention.

### **Body Image and Weight Bias**

Body image is a multidimensional construct that encompasses how an individual feels about their body, their beliefs about the aesthetic and functional properties of their body, their perception of their body size, and their sense of control over their body (Gillen & Markey, 2013). Levels of body dissatisfaction among both males and females have become so prevalent that they are simply deemed as a “normative discontent” (Dakanalis & Riva, 2003; Markey & Markey, 2005; Smolak, 2004). Further, body dissatisfaction is associated with a number of negative consequences including

depression and low self-esteem among both men (Cafri et al., 2005; Cohane & Pope, 2001; Olivardia, Pope, Borowiecki, & Cohane, 2004;) and women (Gillen & Markey, 2013; Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006), eating disorders and disordered eating (see Markey & Markey, 2011), and use of potentially unsafe weight-loss strategies (e.g., diet pills, fasting, laxatives; Liechty, 2010), physical inactivity (see Grogan, 2006), steroid/muscle-enhancing substance use (Cafri et al., 2005), smoking (Wiseman, Turco, Sunday, & Halmi, 1998), and unsafe sex (Littleton, Breitkopf, & Berenson, 2005). As can be seen, body dissatisfaction is problematic on its own, but it may also aid in the development of negative weight attitudes.

Social comparison theory (Festinger, 1954) posits that individuals have an innate drive to evaluate dimensions (e.g., attributes, abilities) of the self, often through comparisons with others. Specifically applied to physical appearance, individuals may make both upward and downward comparisons, comparing their own bodies and/or appearance against individuals perceived to be both superior and inferior (O'Brien, Hunter, Halberstadt, & Anderson, 2007). Holding negative attitudes toward higher body-weight individuals may then be rewarding because they allow the protagonist to feel better about their own body by negatively appraising others' bodies (Dánielsdóttir et al., 2010).

A handful of studies have explored the associations between body image and weight bias. Linking body image to weight discrimination, O'Brien, Latner, Ebner, and Hunter (2013) found that higher physical appearance evaluation and greater appearance orientation significantly predicted more discriminatory ratings of obese targets in a résumé rating task (e.g., perceptions of leadership potential, starting salary). Across two

studies, O'Brien et al. (2007) found that a stronger tendency to make physical appearance comparisons was significantly related to explicit and implicit antifat attitudes. Finally, O'Brien et al. (2009) found that a greater tendency to make downward appearance comparisons predicted both higher appearance evaluation and greater antipathy toward higher body-weight individuals. In other words, participants who reported comparing their appearance to individuals whose appearance they perceived to be inferior also reported higher appearance satisfaction and greater weight bias. Although this data is mostly correlational, the extant evidence suggests that holding anti-fat attitudes and making downward physical appearance comparisons may benefit individuals through enhancing their own appearance satisfaction. However, studies have yet to test the effectiveness of a body image improvement intervention for reducing weight bias.

### **Body Image, Gratitude, and Weight Bias Internalization**

Considering the associations between body dissatisfaction, psychological distress, and unhealthy behaviors, a number of strategies have been tested to improve body image. In a recent meta-analysis of 62 tests of body image improvement interventions, Alleva and colleagues (2015) found that, after accounting for bias, interventions only produced small improvements in body image. Among the strategies the authors identified as most successful for improving body image was changing negative body language. Interventions such as these focused on teaching participants to improve the language they used to describe their body by encouraging them to use objective or positive language rather than negative or judgmental language (Alleva, Sheeran, Webb, Martijn, & Miles, 2015). For instance, in a study of 118 women, Alleva, Marijn, Jansen, and Nederkoorn

(2014) found that participants who wrote about the functionality of their body showed increases in body functionality satisfaction from baseline to a one-week follow-up.

One potential way to increase positive body talk is through practicing body gratitude. Gratitude can be understood as a “wider life orientation towards noticing and appreciating the positive in the world” (Wood, Froh, & Geraghty, 2010, p.2). A growing body of research has found robust associations between gratitude and well-being in general, including improvements in depression, generalized anxiety, drug and alcohol dependence, relationship quality, positive affect, and stress (see Wood et al., 2010). A number of gratitude interventions involve having participants ruminate on, and savor, positive events and elements of their lives. For instance, an empirically supported positive psychology intervention called ‘Three Good Things’ involves having participants write down three good things that happened in their day and the causes of those good things. This exercise, and similar others, increase well-being through having individuals focus on assets rather than deficits and counteract hedonic adaptation to things they might otherwise take for granted (Seligman, Steen, Park, & Peterson, 2005).

Only one study was found examining the effects of gratitude on body image specifically (Geraghty, Wood, & Hyland, 2010). In a study of 479 individuals, Geraghty et al. (2010) gave participants gratitude diaries and instructed them to list six things they felt grateful for each day for two weeks. Participants in the gratitude condition ( $n = 40$ ) reported significantly lower levels of body dissatisfaction compared to a control waitlist condition ( $n = 120$ ). Furthermore, while the gratitude condition performed similarly to a monitoring and restructuring condition (e.g., monitoring negative body thoughts and restructuring them to be positive) for reducing body dissatisfaction, participants in the



gratitude condition were significantly more likely to complete the two week intervention when compared to the monitoring and restructuring condition (Geraghty et al., 2010).

While the diaries implemented in this study used general gratitude, it stands to reason that listing body specific gratitude items could have similar—or potentially stronger—effects.

There is also good reason to believe that reduction techniques effective at improving body image may also work to reduce internalized weight bias. This assumption is based on the conceptual overlap between body dissatisfaction and weight bias internalization. While the weight bias internalization scale captures feelings related to internalized stigma (e.g., *I feel anxious about my weight because of what people might think of me*), it also taps into body dissatisfaction (e.g., *I am less attractive than most other people because of my weight*; O'Brien et al., 2016; Pearl & Puhl, 2014).

Furthermore, weight satisfaction is an important component of many body image measures (e.g., The Multidimensional Body-Self Relations Questionnaire, Cash, 2000). Thus testing the effectiveness of an intervention for both improving body image and reducing weight bias internalization is warranted.

### **The Current Study**

The current experiment investigated the effects of a body gratitude exercise on body satisfaction and internalized and explicit weight bias. First, considering the literature suggesting the effectiveness of gratitude and positive body talk interventions, I predicted that participants in the body gratitude condition would report greater body image satisfaction when compared to participants in the control condition. Additionally, considering the aforementioned conceptual similarity between body dissatisfaction and weight bias internalization, I predicted that participants in the body gratitude condition

would report significantly lower levels of internalized weight bias. Finally, given the proposed theoretical pathway from body image to weight bias, I predicted that participants in the body gratitude condition would report significantly lower levels of explicit antifat attitudes. I also expected that this effect would be mediated by body image, wherein increases in body satisfaction would result in decreased negative weight attitudes.

## **Method**

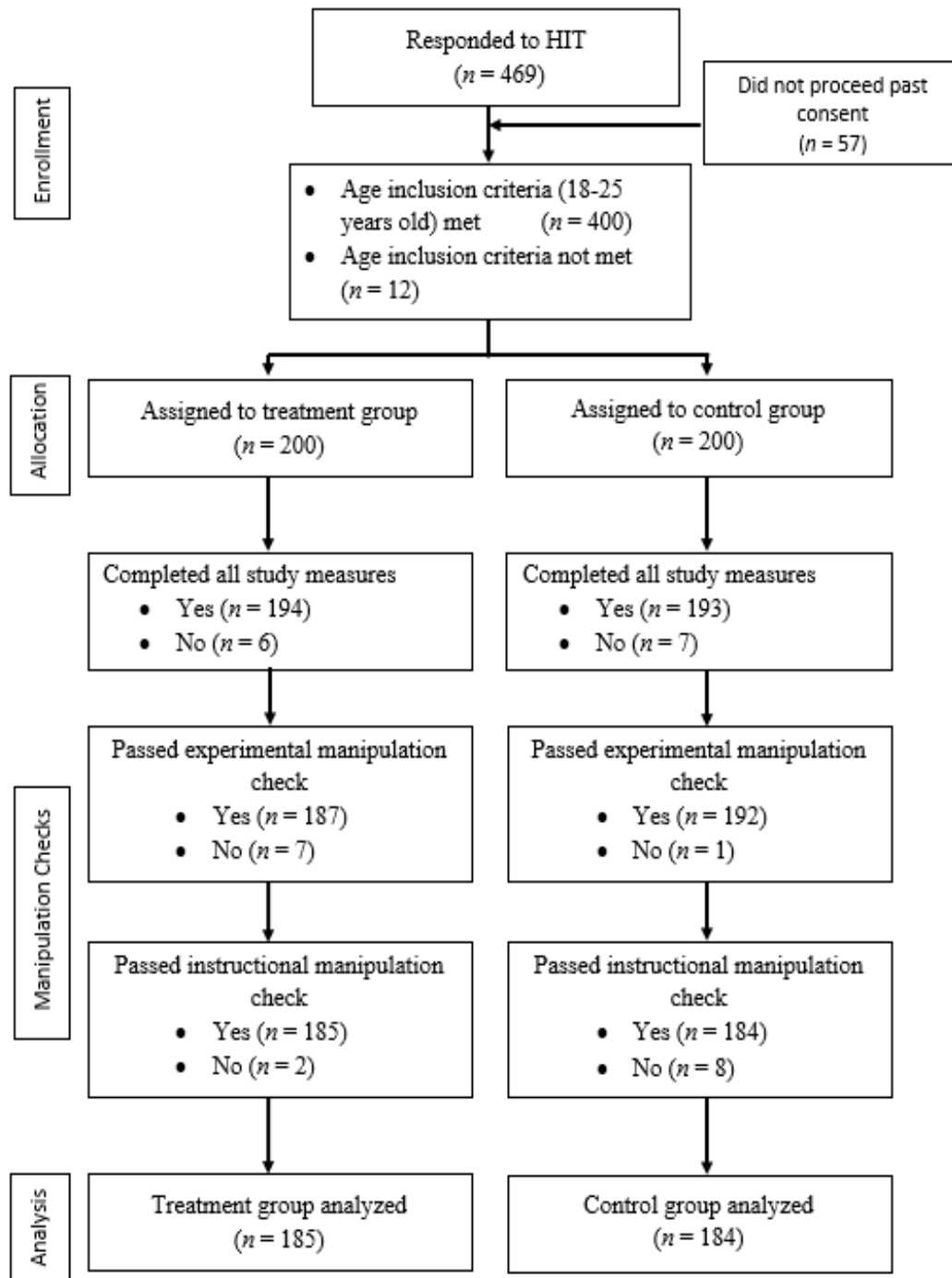
### **Participants**

Prior to data collection, it was determined that a sample size of 350 (175 per group) was needed to achieve a power of .80, two-tailed alpha of .05, and a medium (.30) effective size (Cohen, 1988). A total of 469 individuals were recruited using Amazon.com's Mechanical Turk service (mTurk). Of these respondents, 82 individuals either voluntarily dropped out of the study for unknown reasons, did not consent to the study procedures, did not meet study inclusion criteria (e.g., between the ages of 18-25 years old, residing in the United States), or did not complete all study measures. Another 18 participants were excluded from analyses due to failure to pass the experimental and instructional manipulation checks (described below). The final sample consisted of 369 participants (see Figure 2 for complete study flow).

The mean age for participants in this study was 22.71 years old ( $SD = 2.08$ , Range 18-25), and 51.2% ( $n = 189$ ) were female. A majority of the participants identified as White (74.8%,  $n = 276$ ), with the remainder identifying as Black (11.1%,  $n = 41$ ), Asian (10.0%,  $n = 37$ ), Hispanic (7.3%,  $n = 27$ ), Native American (0.8%,  $n = 3$ ), and/or other (1.1%,  $n = 4$ ). The mean body mass index (BMI) based on self-reported weight and

height was 25.66 ( $SD = 6.36$ , Range 17.21-57.39). A majority of participants had obtained some postsecondary education, with 41.2% ( $n = 152$ ) having a bachelor's degree and 4.3% ( $n = 16$ ) having a graduate or professional degree.

Figure 2  
Study Flow



## Procedure

Participants were recruited using Amazon.com's mechanical Turk (mTurk) service. MTurk is an online data collection source that has been found to produce reliable data from diverse participants (Brochu, Pearl, Puhl, & Brownell, 2014; Buhrmester, Kwang, & Gosling, 2014; Hauser & Schwarz, 2015). In order to participate in the study, mTurk workers had to be between the ages of 18 and 25 years old and live in the United States. Participants were compensated \$0.60 for completing the study, and all study measures were completed online. Study procedures were approved by the university institutional review board.

The study was advertised as a "quick mental exercise followed by a short survey on your attitudes and beliefs." After consenting to participate in the study, participants were randomly assigned to either a body gratitude treatment or a control condition. Participants in both conditions were given instructions to complete a brief thought exercise and were asked to write about their thoughts pertaining to the exercise. After completing the written response, participants reported on their body image, explicit weight bias, weight bias internalization, completed an instructional manipulation check, and provided demographic information. The order of the outcome measures was counter-balanced. Following the main study variables, participants reported on their intentions to complete certain weight-control behaviors, experiences with weight-based teasing, and perceptions of the social acceptability of obesity. The latter measures were purely exploratory and were not used for any analyses. After completion of all measures, participants were debriefed, thanked for their time, and given a compensation code.

**Body gratitude treatment condition.** Similar to the ‘Three Goods Things’ intervention (Seligman et al., 2005), but specific to the body, participants in the body gratitude treatment condition read the following instructions:

Think about aspects of your body that you are grateful for. This can be anything, including your health, physical appearance, or the functionality of your body. Try to come up with at least five things. Take a minute and really think about those things, picturing them in your mind. Once you have finished thinking about these things, choose at least *three* of them and write about why you are grateful for those things. You can write as much as you want, so please be as descriptive as possible.

Below these instructions, participants were provided with a text box to respond to the prompt.

This manipulation was pilot tested ( $N = 32$ ) using a pretest-posttest design to ensure its effectiveness for improving body image. Results indicated significant increases in appearance evaluation and body area satisfaction (described below) following the completion of the exercise ( $ps < .021$ ).

**Control condition.** Participants in the control condition read the following instructions:

Please take a few minutes and imagine your ideal vacation. What would this place look like? What would make it your ideal vacation? What kind of activities would you do there? Take a minute to close your eyes and picture this image. After you have spent some time thinking about these questions, please take a few minutes

and write out your thoughts in the box below. You can write as much as you want, so please be as descriptive as possible.

Below these instructions, participants were provided with a text box to respond to the prompt.

## Measures

**Body image.** The Multidimensional Body-Self Relations Questionnaire (Cash, 2000) is a valid and reliable measure for assessing various aspects of body image. The 34-item scale contains subscales for appearance orientation, appearance evaluation, overweight preoccupation, self-classified weight, and body areas satisfaction. To assess body and appearance satisfaction, only the nine-item body areas satisfaction subscale (BAS) and the seven-item appearance evaluation (AE) subscales were used. For the BAS subscale, participants reported their level of satisfaction with discrete aspects of their appearance (e.g., face, weight, overall appearance) on a 1 (*very dissatisfied*) to 5 (*very satisfied*) scale, with higher scores indicating more satisfaction. Reliability for this subscale was .89. For the AE subscale, participants reported their levels of overall satisfaction with their physical attractiveness (e.g., *I like my looks the way they are*) on a 1 (*definitely disagree*) to 5 (*definitely agree*) scale. Higher scores indicate greater appearance satisfaction. Cronbach's alpha for this scale was .88.

**Explicit weight bias.** To assess negative attitudes toward higher body-weight individuals, participants completed the Anti-fat Attitudes scale (AFA). For the purposes of these analyses, only the 10-item modified version of the dislike subscale (Crandall, 1994; Quinn & Crocker, 1999) was used to assess participants' antipathy toward higher body-weight individuals (e.g., *I don't like fat people much.*). Each item was measured

using a 9-point Likert scale ranging from 1 (*very strongly disagree*) to 9 (*very strongly agree*), with higher scores indicating greater dislike. Cronbach's alpha for this sample was .94.

The Universal Measure of Bias (UMB) was also used to measure explicit weight bias (Latner, O'Brien, Durso, Brinkman, & MacDonald, 2008). The UMB-FAT has been found to have good internal consistency and convergent validity (Latner et al., 2008). The UMB-FAT has subscales to assess negative judgment, social distance, attraction, and equal rights. For the present study, only the five-item negative judgment subscale (e.g., *Fat people tend toward bad behavior.*) was used. Responses ranged from 1 (*strongly agree*) to 7 (*strongly disagree*), with higher scores indicating greater negative judgement. In this sample, the scale had good reliability ( $\alpha = .86$ ).

**Weight bias internalization.** Internalized weight bias was measured using the modified Weight Bias Internalization Scale (WBI; Pearl & Puhl, 2014). This 11-item scale has been found to have strong construct validity and high internal consistency for individuals across various body weight statuses (Pearl & Puhl, 2014). Items are measured on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), with a higher score indicating a greater degree of internalization. Sample items include: "I hate myself for my weight" and "My weight is a major way that I judge my value as a person." Cronbach's alpha for this sample was .90.

**Demographic information.** Participants reported on their age, gender, height, weight, ethnicity, level of education, and income. Height and weight information was used to calculate participant BMI ( $703 \times \frac{\text{weight (lbs)}}{\text{height(in)}^2}$ ).

**Instructional manipulation check.** An instructional manipulation check was used to determine whether participants were actively reading instructions for each measure (Oppenheimer, Meyvis, & Davidenko, 2009). For this check, participants were instructed to respond “No Answer” to the question “How long do you believe this survey was?” and to write “I read the instructions” in a comment box that followed.

### **Statistical Analyses**

All analyses were conducted using Stata v.14 for Windows (StataCorp LP, College Station, TX). All  $p$ -values  $< .05$  were considered statistically significant, and two-tailed  $p$ -values are reported for all hypothesis tests. Data were initially assessed for entry errors, missing values, and outliers. No missing data, entry errors, or significant outliers ( $\pm 3 SD$ ) were found, and therefore no changes were made to the data (Tabachnick & Fidell, 2007). Independent samples  $t$ -tests and Pearson’s  $\chi^2$ -tests were conducted to assess baseline differences between the treatment and control groups on relevant variables (e.g., age, BMI). Bivariate correlations were used to examine the associations between demographic characteristics and outcome variables. Independent samples  $t$ -tests were used to assess differences between control and treatment groups for all main hypotheses.

Prior to data collection, study measures, hypotheses, and planned analyses were registered through the Open Science Framework. Registration materials can be found here: <https://osf.io/kp4gm/>.

## **Results**

### **Manipulation Checks**



Participants' written responses to the prompt based on their assigned condition (body gratitude or ideal vacation) served as experimental manipulation checks. Overall, participants in the treatment condition did not appear to have much difficulty writing about things about their body they were grateful for (e.g., *I am grateful for my eyes because they are blue. I am grateful for my mind because of the way it operates. I am grateful for my hair for being thick and full*). Participants who refused to complete the prompt as specified (e.g., *I am grateful for my optimism*), or who did not enter any relevant text into the box were dropped from analyses ( $n = 7$ ). Participants in the control condition who failed to enter a response pertaining to their ideal vacation were also dropped ( $n = 1$ ). Participants who failed to correctly respond to the instructional manipulation check (e.g., select "No Answer" *and* write "I read the instructions" in the comment box;  $n = 10$ ) were also dropped from analyses (see Figure 2 above for study flow details).

### **Sample Characteristics**

Independent samples  $t$ -tests revealed no significant differences between study conditions in participant BMI or age. In addition, Pearson's  $\chi^2$ -tests indicated that conditions did not significantly differ in terms of gender, racial composition, BMI, or level of education. Demographic characteristics and preliminary analyses test statistics, by condition as well as sample total, are displayed in Table 9.

Bivariate correlations indicated that scores on the dependent variables were unrelated to demographic characteristics of age ( $r(367) < .06$ ,  $ps > .05$ ) and education ( $r(367) < .10$ ,  $ps > .05$ ). Male participants reported significantly higher levels of dislike and negative judgement when compared to females ( $ts > 3.50$ ,  $ps < .0005$ ). Further,

females reported significantly lower levels of appearance evaluation and body area satisfaction and higher levels of internalized weight bias when compared to males ( $ts > 2.04, ps < .043$ ). BMI was significantly associated with all outcome variables (see Table 10). Thus, BMI gender are examined as potential moderators and covariates in subsequent analyses. Among the outcome variables, all were related to each other with the exception of the explicit weight bias variables and weight bias internalization. Table 10 displays the correlations between all main study variables.

Table 9

*Demographic Characteristics*

	Treatment ( <i>n</i> = 185)		Control ( <i>n</i> = 184)			Total ( <i>N</i> = 369)	
Characteristics	<i>n</i>	%	<i>n</i>	%	$\chi^2(df)$	<i>n</i>	%
Female gender	101	54.6	88	47.8	1.69(1)	189	51.2
Race/Ethnicity Categories							
White	142	76.8	134	72.8	.76(1)	276	74.8
Black	19	10.3	22	12.0	.27(1)	41	11.1
Asian/Pacific Islander	19	10.3	18	9.8	.02(1)	37	10.0
Hispanic	11	5.6	16	8.7	1.03(1)	27	7.3
Native American/ American Indian	1	.54	2	1.1	.34(1)	3	.81
Other	2	1.1	2	1.1	.00(1)	4	1.1
Education					5.59(6)		
High School	18	9.7	11	6.0		29	7.9
Some College	84	45.7	88	47.6		172	46.6
Bachelor's Degree	73	39.5	79	42.9		152	41.2
Graduate Degree	6	3.2	10	5.4		16	4.3
	Mean	<i>SD</i>	Mean	<i>SD</i>	<i>t(df)</i>	Mean	<i>SD</i>
Age	22.54	2.11	22.91	2.09	1.95(367)	22.71	2.08
BMI	25.37	6.33	26.04	6.40	1.12(367)	25.66	6.36

Table 10

*Pearson's product moment correlations between relevant study variables  
(N = 369)*

	2	3	4	5	6	7
1. Gender <sup>a</sup>	.04	-.11*	-.19**	.19**	-.21***	-.20***
2. BMI	--	-.37***	-.33***	.40***	-.21***	-.12*
3. AE		--	.88***	-.70***	-.64***	.04
4. BAS			--	-.64***	.13**	.09 <sup>†</sup>
5. WBI				--	.03	-.02
6. AFA					--	.61***
7. UMB						--

<sup>a</sup> 0 = male, 1 = female

*Note.* AE, appearance evaluation; BAS, body area satisfaction; WBI, weight bias internalization; AFA, antifat attitudes-dislike; UMB, universal measure of bias-negative judgement

\*\*\* $p < .001$  \*\* $p < .01$  \* $p < .05$  <sup>†</sup> $p < .10$

### Condition Effects for Body Image and Weight Bias

Independent samples *t*-tests indicated significant differences between the treatment and control group for appearance evaluation, body area satisfaction, and weight bias internalization (see Table 11). Participants in the body gratitude condition reported significantly higher appearance evaluation and body area satisfaction and significantly lower weight bias internalization. These effects were in the small to moderate range (*ds* .28 to .33). Independent samples *t*-tests indicated no significant differences between the treatment and control condition for either measure of explicit weight bias. Table 11 displays means, standard deviations, *t*- and *p*-values, and effect sizes (Cohen's *ds*) for all group comparisons.

### Mediation and Moderation Analyses

Further analyses were conducted to determine whether BMI or gender moderated the differences in body image or weight bias internalization between the conditions.

These analyses revealed no significant two-way (gender\*group; BMI\*group) or three-way (gender\*BMI\*group) interactions ( $ps > .05$ ). Additionally, considering the absence of a direct effect of condition on explicit weight bias, planned mediation analyses were not conducted.

Table 11

*Means (SD) for total sample and by group for each outcome variable along with  $t$  values, significance levels, and effect sizes for group differences.*

Variables	Total ( $N = 369$ )	Treatment ( $n = 185$ )	Control ( $n = 184$ )	$t(df)$	$P$	Effect size <sup>a</sup>
AE	3.47(.85)	3.59(.84)	3.35(.84)	2.73(367)	.007	.29
BAS	3.41(.80)	3.54(.75)	3.28(.82)	3.22(367)	.001	.33
WBI	3.15(1.4)	2.96(1.4)	3.35(1.4)	-2.69(367)	.007	.28
AFA	3.56(1.6)	3.60(1.7)	3.52(1.6)	.47(367)	.637	.05
UMB	3.02(1.2)	3.11(1.3)	2.94(1.2)	1.30(367)	.195	.14

<sup>a</sup>Cohen's  $d$

*Note.* AE, appearance evaluation; BAS, body area satisfaction; WBI, weight bias internalization; AFA, anti-fat attitudes-dislike; UMB, universal measure of bias-negative judgement

## Discussion

The purpose of this study was to examine the effectiveness of a body gratitude intervention on improving body image and decreasing internalized and explicit weight bias. As was hypothesized, participants in the treatment condition reported significantly higher appearance esteem and body satisfaction compared to the control condition. Also as expected, participants in the treatment condition reported significantly lower levels of internalized weight bias when compared to participants in the control condition. These results provide preliminary evidence for the simultaneous improvement of body image and reduction of weight bias internalization. Considering the negative consequences associated with both body dissatisfaction and internalized weight bias, an intervention

that could improve both of these has strong implications for improving individual health and well-being.

To my knowledge, this is the first study to test a weight bias internalization reduction intervention. Further research is needed to determine the effectiveness of interventions like this one, ideally adopting more rigorous designs (e.g., pretest-posttest randomized control trials with multiple follow-up measures), to measure actual changes in outcome measures and if those changes persist over time. Finally, longitudinal studies could indicate whether these changes in body image or weight bias internalization result in adoption of healthier behaviors/discontinuation of unhealthy behaviors over time.

Contrary to predictions, body image improvement did not result in decreases in explicit weight bias. These findings are consistent with a number of other studies demonstrating the ingrained nature of negative weight attitudes (Danielsdottir et al., 2010; Lee, Brannick, & Ata, 2015). Although this study provides some evidence to suggest that body image improvement may not be a fruitful path for decreasing weight bias, studies should continue to examine this association over time using longitudinal designs. It may be the case that the intervention effects are delayed, possibly emerging later after body image improvement has accumulated.

This study has a number of potential limitations. First, this research was conducted online, and thus potential threats to internal validity were numerous. While attempts were made to control for this (manipulation checks, data checks), there is still a possibility that factors other than the study treatment could have affected participants' responses. Second, this study was brief and therefore potentially limited in its impact. Future research should employ more intensive intervention strategies (e.g., body gratitude

daily for two weeks). Finally, direct and conceptual replications are needed to determine the robustness of these effects.

The current research is important because it extends upon understanding of weight bias in two important ways. Firstly, this study found evidence for the potential effectiveness of a relatively simple and efficient body gratitude exercise for reducing weight bias internalization and improving body image. Secondly, this study contributes to a growing literature on the psychological underpinnings of weight bias by demonstrating no direct path between improving body image and decreasing weight bias. While these are important contributions, it is important to approach these findings with caution. While improving body image and reducing weight bias internalization may help mitigate the negative impact of experiences of weight stigma and improve physical and psychological health outcomes, this step should not be taken as an alternative to weight bias reduction. According to Radcliffe and Ellison's (2015) model, a weight stigmatizing environment maintains weight bias internalization. Thus while weight bias remains prevalent and socially acceptable, weight bias internalization and its consequences may persist as well (Logel et al., 2015). Interventions such as these then must be viewed as one component for improving individual health and well-being, alongside other strategies such as reducing weight bias, changing health programming from narrowly focusing on weight loss to broadly focusing on increasing health-promoting behaviors, and encouraging social policies that addresses and prevent weight-based discrimination.

## Chapter 5

### General Discussion

*It is a striking fact that in most instances categories are stubborn and resist change.*

*Gordon Allport, 1954, p.23*

### **Major Findings**

Previous research has indicated numerous negative consequences associated with experiences of weight bias, yet there is no consensus on the best ways to alter these attitudes (Daníelsdóttir, O'Brien, & Ciao, 2010; Lee, Ata, & Brannick, 2014). The aims of the current dissertation were threefold. First, I aimed to determine the effectiveness of three separate weight bias reduction strategies. Second, I wanted to determine which groups the interventions worked more or less effectively for (e.g., individuals with varying levels of disgust sensitivity, appearance orientation, or downward appearance comparison tendencies). Third, I wanted to explore a mechanism potentially underlying negative weight attitudes by testing an indirect path for bias reduction through body image improvement. While not a specific aim of this dissertation, I also examined the effectiveness of the aforementioned body image improvement intervention for weight bias internalization reduction. Below and in the sections that follow, each of these aims are discussed in more detail, along with some specific contributions of this dissertation, directions for future studies, and practical implications of this research.

Concerning the first aim, it was generally hypothesized that each prejudice reduction strategy would result in lower levels of weight bias when compared to a control (all papers) or comparison (paper two) condition. Results indicated mixed results for this hypothesis across the studies. As predicted, counter-stereotypic mental imagery resulted

in lower levels of weight bias when compared to a stereotypic and a neutral control condition (paper two). Contrary to hypotheses, however, exposure to counter-stereotypic media models and improvements in body image did not result in lower levels of weight bias when compared to a neutral control group (papers one and three). These results are in line with other weight bias reduction studies which have demonstrated the general intransigence of these attitudes (Daníelsdóttir et al., 2010; Lee et al., 2014). These results should be interpreted with caution, however, as they are each just one test of a strategy. Directions for future research specific to each strategy are presented in the discussion section of each individual paper.

Concerning the second aim, a number of theoretically relevant moderators were tested for each study. Results indicated that disgust sensitivity, appearance orientation, and downward appearance comparison tendency (papers one and two) did not moderate the relationship between condition and weight attitudes. Considering the significant differences in weight bias reported based on gender and BMI, they were also examined as potential moderators and covariates. These results indicated no significant moderation effects (BMI\*condition, gender\*condition, or BMI\*gender\*condition). Therefore, based on the traits measured, little can be said about the potential effectiveness of these interventions across subgroups of individuals. Suggestions for other potential moderators are offered in the discussion section of each individual paper, including a number of individual difference predictors closely related to other types of prejudice (e.g., need for cognitive closure, social dominance orientation, and right-wing authoritarianism; Hodson & Dhont, 2015; Roets & Van Hiel, 2011).



Concerning the third aim, Study 3 tested an indirect path for weight bias reduction through body image improvement. This study was based on the supposition that individuals may negatively evaluate others' bodies as a means for bolstering their own body image (Dánielsdóttir et al., 2010). Thus improvements in body image were expected to reduce negative weight attitudes. Results indicated that the body gratitude intervention resulted in significantly higher body and appearance satisfaction, and significantly lower levels of internalized weight bias, when compared to the control group. Contrary to expectations, these improvements did not result in subsequent weight bias reduction. Because this is to my knowledge the first study to test this path for bias reduction, the lack of significant results should be interpreted as preliminary evidence only. Further studies using more rigorous designs (e.g., longitudinal) are needed to provide more definitive conclusions for the effectiveness of this intervention path.

### **Counterconditioning and Weight Bias Reduction**

A number of studies within the weight bias literature have employed counterconditioning as a strategy for weight bias reduction (Flint, Hudson, & Lavalley, 2013; Gapinski, Schwartz, & Brownell, 2006; McClure, Puhl, & Heuer, 2011; Pearl, Puhl, & Brownell, 2012). The logic behind counterconditioning is that negative stereotypes can be unlearned through the presentation of stereotype-incompatible (e.g., counter-stereotypical) information (Gapinski et al., 2006). Put another way, stereotype incongruent information may slow social categorization processes and allow for new (i.e., counter-stereotypic) information to be considered alongside old (i.e., stereotypic) information (Carels et al., 2013). This may in turn lead to changes in stereotypes and attitudes. Results from previous studies using this method are equivocal—some studies

have found reduced weight bias (McClure et al., 2011; Pearl et al., 2012) and others have found no significant differences (Flint et al., 2013; Gapinski et al., 2006).

This dissertation provides two more tests of the counterconditioning method, implemented in different ways across the studies. Paper one examined the effects of exposure to counter-stereotypic higher body-weight media models on explicit and implicit weight bias. No significant main effects were found after viewing a ten-minute video clip featuring counter-stereotypic higher-body weight media models. Paper two examined the effects of counter-stereotypic focused mental imagery on explicit weight bias. Results indicated participants in the counter-stereotypic condition reported significantly lower levels of weight bias when compared to the stereotypic and neutral control conditions. Because it is difficult to draw firm conclusions about the effectiveness of this method for weight bias reduction based on these mixed findings and differing implementations, instead I simply offer some speculative explanations for the divergence of results in this area.

The Elaboration Likelihood Model (ELM) of persuasion outlines a number of variables to consider in evaluating paths to attitude change (Petty, Briñol, & Priester, 2009). According to this model, attitude change is more persistent over time and resistant to change when processed through the central route. Central route processing involves individuals drawing on knowledge and past experiences to carefully evaluate information they are presented with. Conversely, peripheral route processing results in (often temporary) attitude changes via simple message cues (e.g., heuristics such as “experts are correct”) not requiring effortful evaluation of information. Also along these routes are a number of other influential variables, for instance the personal relevance of the message,

distractions in the message, and argument quality, which may enhance or detract from a message's impact on attitudes (Petty, Briñol, & Priester, 2009).

There are a number of ways to apply the ELM framework to the present results as well as other extant counterconditioning-based weight bias reduction studies. For instance, it could be that the CS video clip was processed through the peripheral route, considering the minimal effortful evaluation required while viewing the clip, leading to no or minimal and quickly dissipating attitude change. Conversely, the mental imagery task may have been processed through the central route, considering the effortful cognitive activity required for the task, thereby resulting in more significant attitude change. Also possible is that directness of the mental imagery task and the images used in other successful counterconditioning studies (Brochu et al., 2014; McClure et al., 2011; Pearl et al., 2012) force weight/body size and the counter-stereotypic information to be more salient, while a video clip may include distractions (e.g., plot lines, multiple characters) and therefore diminish the salience of weight and the counter-stereotypic information. Designing effective weight bias reduction strategies in this area will require a better understanding of what message elements result in the greatest attitudinal change. For instance, future studies could compare the effectiveness of conditions invoking varying levels of cognitive engagement (e.g., video clips, video clips with a writing component, photographs, photographs accompanied by a story about weight, writing exercises about weight) on weight bias reduction. Other studies could manipulate the salience of weight and/or the counter-stereotypic information (e.g., video clip where weight issues are directly discussed) to gauge how impactful this message element is for attitude change.

Perhaps most interesting of these findings is the relative intransigence of negative weight stereotypes. Because counterconditioning hinges on the supposition that stereotypes can be unlearned through the presentation of counter-stereotypic information, one would expect to see changes in stereotypes alongside attitude changes. In paper two, however, there were significant differences in weight attitudes between the two conditions, yet negative weight stereotypes did not significantly differ. In other words, the counter-stereotypic mental imagery treatment altered participants' reported levels of dislike and negative judgement of high body-weight individuals but did not affect the stereotypes participants assigned to obese people as a group. It is possible then that negative weight attitudes are fueled by some factors in addition to, or other than, negative weight-based stereotypes. More research is needed to understand these associations between negative weight attitudes and stereotypes and the psychological antecedents of weight bias.

### **Internalized Weight Bias Reduction**

While not an explicit aim, another important contribution of the current dissertation is the preliminary evidence presented for an effective weight bias internalization reduction strategy. A number of studies have demonstrated the negative consequences associated with internalized weight stigma (e.g., psychological distress, disordered eating, exercise avoidance; O'Brien et al., 2016; Vartanian & Novak, 2011), suggesting reduction of these attitudes is warranted. Furthermore, there is a substantial amount of conceptual overlap between body dissatisfaction and weight bias internalization. That is, while the weight bias internalization scale captures feelings related to internalized stigma (e.g., "I feel anxious about my weight because of what

people might think of me”), it also taps into elements of body dissatisfaction (e.g., “I am less attractive than most other people because of my weight”; O’Brien et al., 2016; Pearl & Puhl, 2014). Additionally, weight satisfaction/esteem/concerns are considered an important component for many body image measures (e.g., The Multidimensional Body-Self Relations Questionnaire, Cash, 2000). Thus, I hypothesized that the body image improvement intervention (i.e., body gratitude, paper three) would result in both improvements in body and appearance satisfaction and reductions in internalized weight bias. As was predicted, the participants in the treatment group reported higher body and appearance satisfaction and lower levels of internalized weight bias when compared to the control group. To my knowledge, this is the first study to test a strategy for internalized weight bias reduction. Future research is needed to replicate these findings, identify moderators, and determine whether these reductions in internalized weight bias result in behavioral change over time (e.g., less disordered eating, less exercise avoidance).

### **Practical Implications**

Perhaps the most important part of this dissertation are the practical implications. What can actually be done with this knowledge? In designing each of these studies, I prioritized their real-world applicability. No strategies were tested, or manipulations used, that were so far divorced from reality as to render them useless in application. For instance, my choice of video clip for study one was based on what an individual might be exposed to should they come across the show while flipping through the channels. While this study did not find significant changes in weight attitudes as a result of viewing this clip, it would be my hope that future studies attempt to maintain a similar level of

correspondence with real-world situations in their designs. Moreover, studies two and three made use of relatively simple intervention techniques, requiring only a writing prompt and five minutes. Interventions such as these can be employed in various settings (e.g., online, at home, in a classroom), making them that much more practical. This dissertation provided support for the use of these brief writing exercises (e.g., CS mental imagery, body gratitude) to reduce explicit weight bias, reduce internalized weight bias, and improve body image.

### **General Limitations and Future Directions**

There are a number of limitations to the current dissertation. Because each paper delineates the limitations of that particular study, here I will highlight just a few points I consider to be particularly important for the field of weight bias reduction in general. First, this dissertation only measures attitudes at one time point. An important inquiry for future research is to determine the persistence of intervention effects over time. It is quite clear that interventions are unlikely to be very useful if they do not last beyond the time it takes to complete the survey. Indeed, recent studies in the field suggest that strategies which produce initial bias reduction may not have a lasting impact. For instance, Lai and colleagues (under review) recently found that while counter-stereotypic scenarios resulted in significant implicit racial bias reduction, those effects did not hold across time (e.g., a few hours, day). Thus, future research should employ longitudinal designs using multiple follow-up assessments (e.g., after a few hours, a day, a week) to examine how these effects persist over time.

Second, this dissertation relied on explicit and implicit measures of weight bias and therefore cannot draw conclusions about the potential behavioral ramifications of

these attitudes. There is limited evidence examining the links between negative weight attitudes and weight discriminatory behaviors. For instance, Brochu and Morrison (2007) found that neither explicit nor implicit weight bias predicted behavioral intentions (e.g., “How likely is it you would want to become friends with... [target]”) toward overweight targets. In another study, O’Brien et al. (2012) used a resume rating task wherein participants rated job candidates, depicted as either obese or normal weight, in terms of their leadership potential, likelihood of success, and likelihood of getting hired. The authors found no relationship between weight discriminatory ratings and explicit or implicit weight bias (O’Brien et al., 2012). Considering the absence of evidence for a strong relationship between attitudes, behavioral intentions, and behaviors, future studies should utilize behavioral measures in place of or alongside attitudinal measures. For instance, Brochu et al. (2014) used support for a weight discriminatory policy as their main outcome. The authors found that participants who read a news story about a policy to deny fertility treatment to an obese woman that was accompanied by a stigmatizing image of a higher body-weight person were more likely to support said discriminatory policy when compared to participants who viewed the same news story accompanied by a non-stigmatizing image.

### **Concluding Remarks**

It is clear that negative weight attitudes should and can be reduced. The question then arises as to how those attitudes might most effectively be reduced. This dissertation provides tentative support for the use of counter-stereotypic focused mental imagery to reduce weight bias. Furthermore, this dissertation demonstrates that internalized weight stigma may be reduced, and body image improved, through practicing body gratitude.

Moreover, these strategies are both practical and efficient, as they can be easily administered in classroom, work, or home settings. Future research should continue to test these interventions in field settings, using longitudinal designs, and with diverse samples of participants.

While these findings are important, this research must be seen as one piece of a larger effort to address the so-called ‘obesity problem’ and improve population health and well-being overall (Logel et al., 2015). That is, reducing negative weight attitudes and internalized weight stigma are just part of the solution. These strategies must be used in conjunction with other steps such as enacting policies that make it more difficult to discriminate against higher body-weight individuals and promoting adaptive strategies for coping with weight stigma (Logel et al., 2015). Complex problems often require complex solutions.



## Appendix A- Chapter Two Materials

### **Informed Consent Form**

You are invited to participate in a research study that is being conducted by Jamie Dunaev, who is a PhD student in the Childhood Studies Department at Rutgers University. The purpose of this research is to determine how television can influence the attitudes and behaviors of its viewers. Before you participate in this study, it is important that you understand what it involves so that your participation is based on informed consent.

Approximately 250 subjects between the ages of 18 and 25 years old will participate in the study, and each individual's participation will last approximately 1 hour.

This study involves your viewing of a ten-minute television program and completion of a survey. After signing this consent form, you will view the program. You will then complete the survey and a compensation form that will allow you to receive credit for your course.

This research is confidential. Confidential means that the research records will include some information about you and this information will be stored in such a manner that some linkage between your identity and the response in the research exists. Some of the information collected about you includes your height, weight, ethnicity, age, and attitudes about physical appearance. Please note that we will keep this information confidential by limiting individual's access to the research data and keeping it on an encrypted hard drive. The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group

results will be stated. All study data will be kept for 3 years.

This study does not pose any serious risks to your well-being. If for any reason you feel any distress as a result of your participation in this study, please inform the researcher and you will be referred to the Rutgers-Camden Health Center. The Health Center can provide counseling services to Rutgers students and can provide referrals to non-Rutgers students.

This study will take you approximately 1 hour to complete. You will be compensated with 1 hour of research credit for your introductory psychology class or the appropriate amount of credit as agreed upon with your specific professor.

In addition to receiving course credit for your participation in this study, you will have the option to learn more about the study and results at the end of your participation today. It is our hope that your participation in this study also increases your understanding of the way that psychologists do research.

Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

If you have any questions about the study or study procedures, you may contact Jamie Dunaev of the Department of Childhood Studies (323 Cooper St., Camden, NJ, 08102; 856-225-6741; [jamie.dunaev@rutgers.edu](mailto:jamie.dunaev@rutgers.edu)) or you may contact my advisor Dr. Charlotte Markey at (348 Armitage 311 North 5th Street, Camden, NJ, 08102; (856) 225-6332; [chmarkey@camden.rutgers.edu](mailto:chmarkey@camden.rutgers.edu)).

If you have any questions about your rights as a research subject, please contact an IRB Administrator at the Rutgers University, Arts and Sciences IRB:

Institutional Review Board

Rutgers University, the State University of New Jersey

Liberty Plaza / Suite 3200

335 George Street, 3<sup>rd</sup> Floor

New Brunswick, NJ 08901

Email: [humansubjects@orsp.rutgers.edu](mailto:humansubjects@orsp.rutgers.edu)

[\(732\)235-9806](tel:(732)235-9806)

You will be given a copy of this consent form for your records.

Sign below if you agree to participate in this research study:

Subject (Print) \_\_\_\_\_

Subject Signature \_\_\_\_\_ Date \_\_\_\_\_

Principal Investigator Signature \_\_\_\_\_ Date \_\_\_\_\_

**Study Advertisement****What is the study about?**

This study will examine how the media shapes individuals' attitudes. Participants will be asked to watch a video and complete a questionnaire that will take approximately 1 hour to complete.

**Who is eligible?**

All participants must be able to speak and write fluently in English and must be between 18 and 25 years old.

**Where is the study taking place?**

This study will take place in the Healthy Development Lab at Rutgers University, Camden located in Armitage Hall Basement, B21-C.

**When can I participate in the study?**

Participation in the study will take approximately 1 hour to complete. You can sign up for a time to participate through the Experimetrix website.

**Are participants compensated?**

Participation is completely voluntary. Participants enrolled in introductory psychology courses can receive 1 hour of subject pool participation credit.

For more information about this study, contact Jamie Dunaev by email

Jamie.Dunaev@gmail.com.

**Debriefing**

Thank you for participating in our study today. Before leaving, we would like to tell you a little bit more about our study.

The purpose of this study was not only to examine college students' perceptions of appearance on television, but to also measure whether or not viewing a television show would affect individuals' attitudes toward obese individuals.

For more information about this study, contact Jamie Dunaev by email

Jamie.Dunaev@gmail.com.

## Appendix B – Chapter Three Materials

### **Informed Consent Form**

You are invited to participate in a research study that is being conducted by Jamie Dunaev who is a PhD candidate in the Childhood Studies Department at Rutgers University. The purpose of this research is to determine how various mental exercises may affect individual's attitudes and beliefs. Before you participate in this study, it is important that you understand what it involves so that your participation is based on informed consent.

Approximately 350 subjects between the ages of 18 and 25 years old will participate in the study, and each individual's participation will last no more than 1 hour.

This study involves your completion of a simple mental task and a series of psychological measures. After completing the consent form, you may begin the study. Following completion of the study you will be given a code that you will use to receive compensation for your participation. You will be compensated \$ 0.50 for your time.

There are no foreseeable risks to participation in this study.

This research is anonymous. Anonymous means that I will record no information about you that could identify you. There will be no linkage between your identity and your response in the research. This means that I will not record your name, address, phone number, date of birth, etc. If you agree to take part in the study, you will be assigned a random code number that will be used on each test and the questionnaire. There will be no way to link your responses back to you. Therefore, data collection is anonymous.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report

of this study is published, or the results are presented at a professional conference, only group results will be stated. **Data will be encrypted and kept on a secure hard drive at Rutgers University, Camden.** All study data will be kept for three years.

Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

In addition you will have the option to learn more about the study and results at the end of your participation today. It is our hope that your participation in this study also increases your understanding of the way that psychologists do research.

If you have any questions about the study or study procedures, you may contact myself, Jamie Dunaev, at [Jamie.Dunaev@Rutgers.edu](mailto:Jamie.Dunaev@Rutgers.edu); (856) 225-6741; 323 Cooper St., Camden, NJ 08102. You can also contact my faculty advisor, Dr. Charlotte Markey, at [chmarkey@camden.rutgers.edu](mailto:chmarkey@camden.rutgers.edu) ; (856) 225-6332; 348 Armitage, 311 North 5<sup>th</sup> Street, Camden, NJ, 08102.

If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University:

Rutgers University, the State University of New Jersey  
Institutional Review Board for the Protection of Human Subjects  
Office of Research and Sponsored Programs  
Liberty Plaza/Suite 3200  
335 George St., 3<sup>rd</sup> Floor  
New Brunswick, NJ 08901

Tel: 732-235-9806

Email: [humansubjects@orsp.rutgers.edu](mailto:humansubjects@orsp.rutgers.edu)

Please retain a copy of this form for your records. By participating in the above stated procedures, then you agree to participation in this study.

If you are 18 years of age or older, understand the statements above, and will consent to participate in the study, click on the "I Agree" button to begin the survey/experiment. If not, please click on the "I Do Not Agree" button which you will exit this program.



**Debriefing**

Thank you for participating in our study today. Before leaving, we would like to tell you a little bit more about our study and offer you the opportunity to learn about our results when the study is complete.

The purpose of this study was to examine how imaging overweight individuals in a more positive light would affect participants' attitudes toward overweight individuals.

For more information about this study, contact Jamie Dunaev by email

Jamie.Dunaev@gmail.com.

## Appendix C- Chapter Four Materials

### **Informed Consent Form**

You are invited to participate in a research study that is being conducted by Jamie Dunaev who is a PhD candidate in the Childhood Studies Department at Rutgers University. The purpose of this research is to determine how various mental exercises may affect individual's attitudes and beliefs. Before you participate in this study, it is important that you understand what it involves so that your participation is based on informed consent.

Approximately 400 subjects between the ages of 18 and 25 years old will participate in the study, and each individual's participation will last no more than 1 hour.

This study involves your completion of a simple mental task and a series of psychological measures. After completing the consent form, you may begin the study. Following completion of the study you will be given a code that you will use to receive compensation for your participation. You will be compensated \$ 0.60 for your time.

There are no foreseeable risks to participation in this study.

This research is anonymous. Anonymous means that I will record no information about you that could identify you. There will be no linkage between your identity and your response in the research. This means that I will not record your name, address, phone number, date of birth, etc. If you agree to take part in the study, you will be assigned a random code number that will be used on each test and the questionnaire. There will be no way to link your responses back to you. Therefore, data collection is anonymous.

The research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report

of this study is published, or the results are presented at a professional conference, only group results will be stated. **Data will be encrypted and kept on a secure hard drive at Rutgers University, Camden.** All study data will be kept for three years.

Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

In addition you will have the option to learn more about the study and results at the end of your participation today. It is our hope that your participation in this study also increases your understanding of the way that psychologists do research.

If you have any questions about the study or study procedures, you may contact myself, Jamie Dunaev, at [Jamie.Dunaev@Rutgers.edu](mailto:Jamie.Dunaev@Rutgers.edu); (856) 225-6741; 323 Cooper St., Camden, NJ 08102. You can also contact my faculty advisor, Dr. Charlotte Markey, at [chmarkey@camden.rutgers.edu](mailto:chmarkey@camden.rutgers.edu) ; (856) 225-6332; 348 Armitage, 311 North 5<sup>th</sup> Street, Camden, NJ, 08102.

If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University:

Rutgers University, the State University of New Jersey  
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New Brunswick, NJ 08901

Tel: 732-235-9806

Email: [humansubjects@orsp.rutgers.edu](mailto:humansubjects@orsp.rutgers.edu)

Please retain a copy of this form for your records. By participating in the above stated procedures, then you agree to participation in this study.

If you are 18 years of age or older, understand the statements above, and will consent to participate in the study, click on the "I Agree" button to begin the survey/experiment. If not, please click on the "I Do Not Agree" button which you will exit this program.

**Debriefing**

Thank you for participating in our study today. Before leaving, we would like to tell you a little bit more about our study and offer you the opportunity to learn about our results when the study is complete.

The purpose of this study was to examine how practicing body gratitude would affect participants' body image and attitudes toward overweight individuals.

For more information about this study, contact Jamie Dunaev by email

Jamie.Dunaev@gmail.com.

## **Registration Materials**

### **Participant Recruitment Plan**

**Recruitment description.** Participants will first learn about the study through Amazon Mechanical Turk, and if interested in participating, will click on the survey link.

Participants responding to the HIT in the Amazon.com marketplace will be redirected to the online study questionnaire and prompted to read the consent form. The consent form will provide the participant with information about the study in general, study procedures, and the contact information for the PIs. Participants will be instructed to contact the principal investigator if they have any questions about the study. Participants will be able to take as much time as needed to consider participation. Participants will indicate voluntary consent to enter the study by clicking the “I Agree” box.

Next participants will be directed to the study questionnaire (hosted by Qualtrics).

Participants will complete the study measures online. Following completion of all of the survey measures, participants will be given contact information for the PIs should they have further questions about the study. Upon completion participants will receive a code to enter into Amazon.com to receive their compensation (\$0.60). The total process from start to finish should take 5-10 minutes.

### **HIT information.**

*Description:* Complete a short mental exercise and questionnaire about your attitudes and beliefs (5-10 minutes)

*Reward:* \$0.60

*Keywords:* psychology, academic, survey, research, questionnaire, attitudes, beliefs

*Instructions:* We would like you to answer some questions about yourself. This survey should take 5-10 minutes to complete. You must be 18-25 years old to participate in this study. You will only be paid once for participation, so please do not attempt to take the survey multiple times.

Select the link below to begin the survey. Once you have completed all the measures, you will receive a code to paste into the box below to receive credit for taking our survey.

Make sure to leave this window open as you complete the survey. When you are finished, you will return to this page to paste the code into the box.

**Sample size.** Our planned sample size is  $N = 350$  (175/group). This sample size has been chosen based on main planned analyses (independent samples  $t$  test), with a power of .80, two-tailed alpha of .05, and a medium (.30) effect size.

### **Study Rationale and Data Analytic Plan**

**Objective.** The aim of the present study is to determine the effectiveness of a body image exercise (specifically body gratitude; compared to a control group) for improving body image, decreasing negative attitudes toward overweight individuals, and decreasing internalized weight bias.

#### **Study measures.**

##### *Independent variable*

Experimental group: a body gratitude exercise

Control group: imagine an ideal vacation

##### *Demographics*

Age, gender, race/ethnicity, income, education, weight, height

Weight perception (participants will be asked to classify themselves into a particular weight category)

*Outcome variables*

Universal Measure of Bias- FAT (UMB; 20 items; Latner et al., 2008)

Antifat Attitudes Questionnaire (AFA; 21 items; Crandall, 1994; modified by Quinn and Crocker, 1999)

Multi-dimensional Body Self-Relations Questionnaire (MBSRQ; 36-items; Cash, 2000)

Weight Bias Internalization Scale-Modified (WBI; 11 items; Pearl & Puhl, 2014)

*Other variables*

Social Permissibility of Obesity (3 items; Lin & McFerran, 2015)

Experiences of Weight Teasing ( 3 items; Puhl & Heuer, 2011)

Instructional manipulation check (1 item created for this study)

Weight Management Behaviors (6 items, created for this study)

BMI (to be calculated based on self-reported weight and height)

Weight Category (participants will be classified as belonging to particular weight categories based on their BMI and CDC standards ( $\leq 18.5$  'underweight'; 18.6-25 'normal weight'; 25-29.9 'overweight';  $\geq 30$  'obese'))

**Exclusion/missing data.** Participants who are not between the ages of 18-25, or that do not reside in the United States, will be excluded from all analyses. Participants who fail the instructional manipulation check will be excluded from all analyses.



Participants with excessive missing data will be excluded from analyses. Data will be checked for outliers (standardized scores  $> 3$  SD from the mean). Only outliers that suggest clearly invalid data (e.g., data entry error) will be removed from analyses.

### **Preliminary Analyses**

Descriptive statistics and bivariate correlations will be calculated for all study variables. Independent samples  $t$  tests and  $\chi^2$  test will be used to determine whether significant differences exist between the study groups for all relevant demographic variables (as a randomization check; BMI, age, race, gender, etc.). If differences do exist, appropriate steps will be taken to control for these variables.

### **Study Hypotheses**

**H1.** We expect that participants in the experimental group will report significantly higher body image scores (the appearance evaluation and body area satisfaction subscales of the MBSRQ) when compared to the control group.

*H1 Planned analysis:* Independent Samples  $t$  tests

**H2.** We expect that participants in the experimental group will report significantly lower antifat attitudes (the dislike subscale of the AFA and the negative judgement subscale of the UMB) when compared to the control group.

*H2 Planned analysis:* Independent Samples  $t$  tests

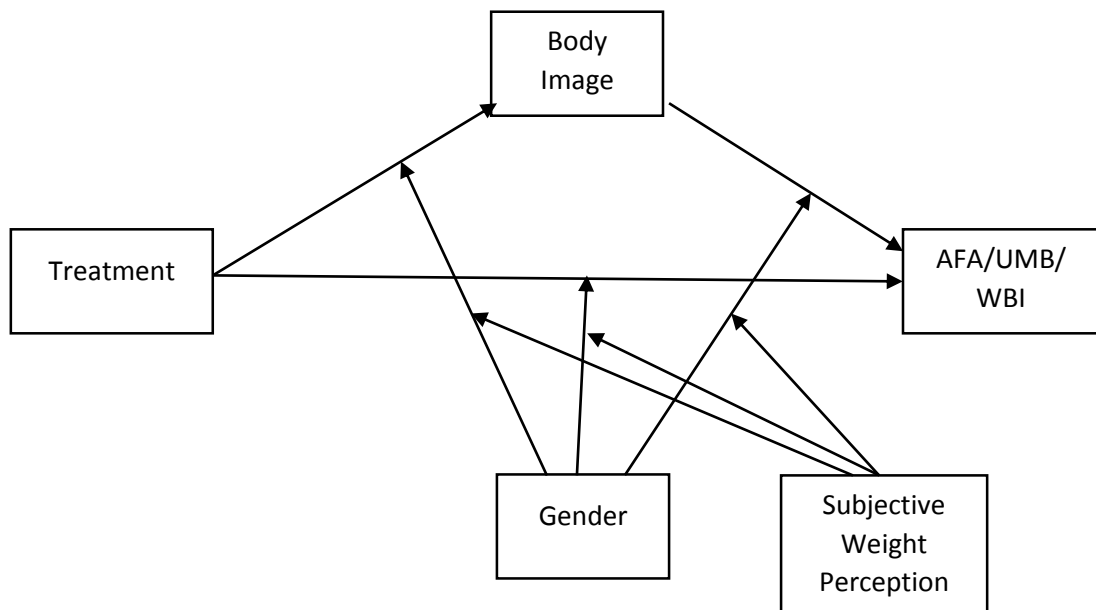
**H3.** We expect that participants in the experimental group will report significantly lower internalized weight bias when compared to the control group.

*H3 Planned analysis:* Independent Samples  $t$  tests

**Additional planned analyses.** In addition to the main effects models, I will also test whether body image (the appearance evaluation and body area satisfaction subscales of

the MBSRQ) mediates the path between study group and antifat attitudes (the dislike subscale of the AFA and the negative judgement subscale of the UMB). Because research suggests that gender and weight category membership may affect body image and negative attitudes toward overweight individuals (i.e., women tend to be more dissatisfied with their bodies, higher body weight individuals tend to have more body dissatisfaction, men tend to have more negative attitudes toward higher body weight individuals, normal weight people tend to have more negative attitudes toward higher body weight individuals), the PROCESS macro (Hayes) will be used to test for moderated mediation (see model below).

**Mediation models to be tested.**



**Exploratory analyses.** Bivariate correlations and regression models will be used to explore the associations between body image, negative attitudes toward overweight

individuals, perceptions of the social permissibility of obesity, and weight management behaviors.

## Appendix D- Measures

**Demographics**

---

1. How old are you? (in years)

2. What is your gender?

Female

Male

Other (please specify)

3. What is your race/ethnicity? (select all that apply)

White or Caucasian

Black or African American

American Indian or Native American or Aleutian or Eskimo

Asian or Pacific Islander

Hispanic

None of these options apply to me (please specify)

4. How tall are you? (in inches)

5. How much do you weigh? (in pounds)

6. In terms of weight, how would you classify yourself?

Underweight

Normal Weight

Overweight

Obese

7. Last year pre-tax and including all sources, what was your total HOUSEHOLD income?

Under \$20,000

\$20,000 to \$49,000

\$50,000 to \$75,000

\$75,000 or greater

8. What is the highest level of education you have completed?

Less than high school

High school or GED

Some college

2-year college degree

4-year college degree

Doctoral degree

Professional degree (JD, MD)

None of these options apply to me (please specify)

9. Are you currently (select one)

Single

Dating a significant other

Living with a significant other

Married

Divorced

Widowed

**Anti-fat Attitudes Questionnaire (Crandall, 1994; modified by Quinn & Crocker, 1999)**

---

Below are a number of statements with which you may agree or disagree. Please indicate how much you agree or disagree with each statement on a 1 (disagree strongly) to 9 (agree strongly) scale.

1. Some people are fat because they have no willpower.
2. I don't have many friends that are fat.
3. Fat people make me feel somewhat uncomfortable.
4. Fat people tend to be fat pretty much through their own fault.
5. Although some fat people are surely smart, in general, I think they tend not to be quite as bright as normal weight people.
6. One of the worst things that could happen to me would be if I gained 25 pounds.
7. If I were an employer looking to hire, I might avoid hiring a fat person.
8. People who weigh too much could lose at least some of part of their weight through a little exercise.
9. I really don't like fat people much.
10. I feel disgusted with myself when I gain weight.
11. I worry about becoming fat.
12. I tend to think that people who are overweight are a little untrustworthy.
13. I have a hard time taking fat people too seriously.
14. I feel repulsed when I see a fat person.
15. Fat people disgust me.

16. I have an immediate negative reaction when I meet a fat person.
17. Fat people can lose weight if they really want to.
18. Through a combination of exercise and dieting, anyone can lose weight and keep it off indefinitely.
19. The medical problems that overweight people have are their own fault.
20. Overweight people are responsible for their own problems.
21. Weight is something which is under a person's control.

**Universal Measure of Bias- Fat (Latner et al., 2008)**

---

Below are a number of statements with which you may agree or disagree. Please indicate how much you agree or disagree with each statement on a 1 (disagree strongly) to 7 (agree strongly) scale.

1. Fat people tend toward bad behavior.
2. Fat people are sloppy.
3. Sometimes I think that fat people are dishonest.
4. Fat people have bad hygiene.
5. In general, fat people don't think about the needs of other people.
6. I would not want to have a fat person as a roommate.
7. I like fat people.
8. I don't enjoy having a conversation with a fat person.
9. I would be comfortable having a fat person in my group of friends.
10. I would like having a fat person at my place of worship or community center.
11. I find fat people attractive.
12. Fat people make good romantic partners.

13. I find fat people to be sexy.
14. Fat people are a turn-off.
15. I find fat people pleasant to look at.
16. Special effort should be taken to make sure that fat people have the same rights and privileges as other people.
17. Special effort should be taken to make sure that fat people have the same salaries as other people.
18. Special effort should be taken to make sure that fat people have the same educational opportunities as other people.
19. Special effort should be taken to make sure that fat people have the same housing opportunities as other people.
20. I try to understand the perspective of fat people.

### Fat Phobia Scale (Bacon, Scheltema, & Robinson, 2001)

Listed below are 14 pairs of adjectives sometimes used to describe obese or fat people.

For each adjective pair, please place an X on the line closest to the adjective that you feel best describes your feelings and beliefs.

1. lazy \_\_\_\_\_ 5 \_\_\_\_\_ 4 \_\_\_\_\_ 3 \_\_\_\_\_ 2 \_\_\_\_\_ 1 \_\_\_\_\_ industrious
2. no will power \_\_\_\_\_ 5 \_\_\_\_\_ 4 \_\_\_\_\_ 3 \_\_\_\_\_ 2 \_\_\_\_\_ 1 \_\_\_\_\_ has will power
3. attractive \_\_\_\_\_ 5 \_\_\_\_\_ 4 \_\_\_\_\_ 3 \_\_\_\_\_ 2 \_\_\_\_\_ 1 \_\_\_\_\_ unattractive
4. good self-control \_\_\_\_\_ 5 \_\_\_\_\_ 4 \_\_\_\_\_ 3 \_\_\_\_\_ 2 \_\_\_\_\_ 1 \_\_\_\_\_ poor self-control



5. fast \_\_\_\_\_ slow  
5 4 3 2 1

6. having endurance \_\_\_\_\_ having no endurance  
5 4 3 2 1

7. active \_\_\_\_\_ inactive  
5 4 3 2 1

8. weak \_\_\_\_\_ strong  
5 4 3 2 1

9. self-indulgent \_\_\_\_\_ self-sacrificing  
5 4 3 2 1

10. dislikes food \_\_\_\_\_ likes food  
5 4 3 2 1

11. shapeless \_\_\_\_\_ shapely  
5 4 3 2 1

12. undereats \_\_\_\_\_ overeats  
5 4 3 2 1

13. insecure \_\_\_\_\_ secure  
5 4 3 2 1

14. low self-esteem \_\_\_\_\_ high self-esteem  
5 4 3 2 1

### **Modified Weight Bias Internalization Scale (Pearl & Puhl, 2014)**

---

Below are a number of statements with which you may agree or disagree. Please indicate how much you agree or disagree with each statement on a 1 (disagree strongly) to 7 (agree strongly) scale.

1. Because of my weight, I feel that I am just as competent as anyone.
2. I am less attractive than most other people because of my weight.
3. I feel anxious about my weight because of what people might think of me.

4. I wish I could drastically change my weight.
5. Whenever I think a lot about my weight, I feel depressed.
6. I hate myself for my weight.
7. My weight is a major way that I judge my value as a person.
8. I don't feel that I deserve to have a really fulfilling social life, because of my weight.
9. I am OK being the weight that I am.
10. Because of my weight, I don't feel like my true self.
11. Because of my weight, I don't understand how anyone attractive would want to date me.

#### **Multi-dimensional Body Self-Relations Questionnaire (Cash, 2000)**

---

Below are a number of statements with which you may agree or disagree. Please indicate how much you agree or disagree with each statement on a 1 (disagree strongly) to 5 (agree strongly) scale.

1. Before going out in public, I always notice how I look.
2. I am careful to buy clothes that will make me look my best.
3. My body is sexually appealing.
4. I constantly worry about becoming fat.
5. I like my looks the way they are.
6. I check my appearance in a mirror whenever I can.
7. Before going out, I usually spend a lot of time getting ready.
8. I am very conscious of even small changes in my weight.
9. Most people would consider me good looking.

10. It is important that I always look good.
11. I use very few grooming products.
12. I like the way I look without my clothes on.
13. I am self-conscious if my grooming isn't right.
14. I usually wear whatever is handy without caring how it looks.
15. I like the way my clothes fit me.
16. I don't care about what people think about my appearance.
17. I take special care with my hair grooming.
18. I dislike my physique.
19. I am physically unattractive.
20. I never think about my appearance.
21. I am always trying to improve my physical appearance.
22. I am on a weight-loss diet.
23. I have tried to lose weight by fasting or going on crash diets (Never, Rarely, Sometimes, Often, Very Often)
24. I think I am
  - Very underweight
  - Somewhat underweight
  - Normal weight
  - Somewhat overweight
  - Very overweight
25. From looking at me, most other people would think I am:
  - Very underweight

Somewhat underweight

Normal weight

Somewhat overweight

Very overweight

26. What are you currently trying to do about your weight? (check the best answer)

Lose weight

Stay the same weight

Gain weight or bulk up

Not trying to do anything about weight

Please indicate how satisfied you are with the following areas or aspects of your body on a 1 (very dissatisfied) to 5 (very satisfied) scale.

- a. Face (facial features, complexion)
- b. Muscle tone
- c. Weight
- d. Body overall
- e. Overall appearance
- f. Hair (color, thickness, texture)
- g. Lower torso (buttocks, hips, thighs, legs)
- h. Mid torso (waist, stomach)
- i. Upper torso (chest or breasts, shoulders, arms)
- j. Height

### **Downward Appearance Comparison Scales (O'Brien et al., 2009)**

---

Please indicate your level of agreement with the following statements on a 1 (strongly disagree) to 5 (strongly agree) scale.

1. When I see a person who is physically unattractive I think about how my body compares to theirs.
2. I tend to compare my body to those who have below average bodies.
3. At the beach, gym, or sporting events I compare my body to those with less athletic bodies.
4. I compare myself to people less good looking than me.
5. I think about how attractive my body is compared to overweight people.
6. At parties I often compare my looks to the looks of unattractive people.
7. I often compare myself to those who are less physically attractive.
8. I tend to compare my physical appearance with people whose bodies are not as physically appealing.

### **Three Domain Disgust Scale (Tybur, Lieberman, & Griskevicius, 2009)**

---

The following items describe a variety of concepts. Please rate how disgusting you find the concepts described in the items, where 0 means that you do not find the concept disgusting at all, and 6 means that you find the concept extremely disgusting.

1. Shoplifting a candy bar from a convenience store
2. Hearing two strangers having sex
3. Stepping on dog poop
4. Stealing from a neighbor
5. Performing oral sex
6. Sitting next to someone who has red sores on their arm

7. A student cheating to get good grades
8. Watching a pornographic video
9. Shaking hands with a stranger who has sweaty palms
10. Deceiving a friend
11. Finding out that someone you don't like has sexual fantasies about you
12. Seeing some mold on old leftovers in your refrigerator
13. Forging someone's signature on a legal document
14. Bringing someone you just met back to your room to have sex
15. Standing close to a person who has body odor
16. Cutting to the front of a line to purchase the last few tickets to a show
17. A stranger of the opposite sex intentionally rubbing your thigh in an elevator
18. Seeing a cockroach run across the floor
19. Intentionally lying during a business transaction
20. Having anal sex with someone of the opposite sex
21. Accidentally touching a person's bloody cut

**Social Permissibility of Obesity (Lin & McFerran, 2015)**

---

Please read each of the statements below and indicate the choice that best reflects your agreement with the statement (1 Strongly Disagree/7 Strongly Agree)

1. Being obese or overweight is normal
2. It is ok to be obese or overweight
3. It is perfectly fine to be obese or overweight these days

**Weight Management Behaviors (adapted from French, 1995)**

---

Please indicate how likely you are to engage in the activities listed below this week (0 very unlikely/ 6 very likely)

This week I will...

1. Engage in some sort of physical activity (e.g., walking, running, sports)
  2. Eat a healthier diet (e.g., more fruits and vegetables, less junk food)
  3. Go on a diet to lose weight
  4. Use some other method to lose weight (e.g., diet pills, fasting, vomiting)
- 
1. How would you describe your overall eating habits?  
  
Very unhealthy  
  
Somewhat unhealthy  
  
Neither health nor unhealthy  
  
Somewhat healthy  
  
Very healthy
  2. How would you describe your overall activity level?  
  
Very inactive  
  
Somewhat inactive  
  
Neither inactive nor active  
  
Somewhat active  
  
Very active

**Weight Teasing (Puhl & Heuer, 2011)**

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Please chose the answer the best corresponds to your experience with each item below (1: yes; 2: no)

1. Have you been teased or made fun of because of your weight?
2. Have you ever been treated unfairly because of your weight?
3. Have you ever been discriminated against because of your weight?

**Instructional Manipulation Check Question**

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- 1) Your participation in this survey is almost complete. It is important to make sure that you have read all of the instructions very carefully. In the box labeled "Any other questions or comments?" please write "I read the instructions." You may also leave any comments that you have about the survey in that box.



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## Curriculum Vitae

**Jamie L. Dunaev, Ph.D.**

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 Camden, NJ 08102  
[Jamie.Dunaev@gmail.com](mailto:Jamie.Dunaev@gmail.com)

**EDUCATION**

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*Ph.D.*, Childhood Studies, Rutgers University, Camden, NJ, May 2016  
 Committee Chair: Dr. Robert Atkins  
 Committee Members: Dr. Charlotte Markey, Dr. Robin Stevens, and Dr. Paula Brochu  
 Title: *Dropping the weight bias: Evaluating weight bias reduction strategies for late adolescents.*

*B.A.*, double major in Anthropology and Sociology, East Tennessee State University,  
 Johnson City, TN, May 2008, GPA: 3.97

**RESEARCH INTERESTS**

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Bias, stigma, and prejudice; Poverty and health; Adolescent health; Health disparities and social inequality; Health communication; Interdisciplinary research; Civic engagement

**FELLOWSHIPS, AWARDS, AND HONORS**

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*Graduate Research Assistantship*, 2016, Rutgers University-Camden (\$13,000)  
*Graduate School Dissertation Fellowship*, 2015-2016, Rutgers University-Camden (\$5,000)  
*David K. Sengstack Graduate Fellowship*, 2015-2016, Rutgers University-Camden (\$16,000)  
*Childhood Studies Departmental Graduate Assistantship*, 2010-2015, Rutgers University- Camden (full tuition plus living stipend)  
*Segal AmeriCorps Education Award*, 2010, for completion of 1,700 service hours (\$3,000)  
*Summa cum laude*, 2008, East Tennessee State University  
*Most Outstanding Student in the Anthropology Major*, 2008, East Tennessee State University  
*Most Outstanding Student in the Sociology Major*, 2008, East Tennessee State University  
*Tennessee Hope Scholarship*, 2004-2008, East Tennessee State University (full tuition)  
*General Assembly Merit Scholarship*, 2004-2008, East Tennessee State University (\$1,500/semester)  
*Academic Performance Scholarship*, 2003-2007, East Tennessee State University (full tuition)

## RESEARCH AND TRAVEL GRANTS

- 
- Association for Psychological Science Student Caucus Conference Travel Award*, 2016, Association for Psychological Science (\$490)
- Edie Moore Student Travel Scholarship*, 2016, Society for Adolescent Health and Medicine (\$1,300)
- Graduate Professional Development Research Fund Award*, 2016, Rutgers University-Camden (\$700)
- Dean's Conference Travel Grant*, 2015, College of Arts and Sciences, Rutgers University- Camden (\$500)
- Departmental Conference Travel Grant*, 2015, Department of Childhood Studies, Rutgers University-Camden (\$250)
- Dean's Conference Travel Grant*, 2013, College of Arts and Sciences, Rutgers University- Camden (\$500)
- Conference Travel Grant*, 2012, Center for Children and Childhood Studies, Rutgers University-Camden (\$400)
- Dean's Conference Travel Grant*, 2012, College of Arts and Sciences, Rutgers University- Camden (\$500)

## PUBLICATIONS

(\*indicates student co-author)

- 
1. **Dunaev, J.**, Schulz, J., & Markey, C. (2016). Cosmetic surgery attitudes among midlife women: Body image and fear of negative appearance evaluation. *The Journal of Health Psychology*. doi: 10.1177/1359105316642249
  2. Stevens, R., Gilliard-Matthews, S., **Dunaev, J.**, Woods, M., & Brawner, B. (2016). The digital hood: Social media use among youth living in disadvantaged neighborhoods. *New Media and Society*, 1-18. doi: 10.1177/1461444815625941
  3. Gilliard-Matthews, S., Stevens, R., Nilsen, M., & **Dunaev, J.** (2015). "You see it everywhere. It's just natural." Contextualizing the role of peers, family, and neighborhood in initial adolescent substance use. *Deviant Behavior*, 00, 1-18. doi: 10.1080/01639625.2014.944068
  4. Stevens, R., Gilliard-Matthews, S., Nilsen, M., Malven, E., & **Dunaev, J.** (2014). Socioecological factors in sexual decision making among urban girls and young women. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 43(5), 644-654. doi: 10.1111/1552-6909.12493.

### Accepted

Stevens, R., **Dunaev, J.**, Malven, E, Bleakley, A., & Hull, S. (2016). Social media in the sexual lives of African American and Latino youth: Challenges and opportunities. Accepted at *Media and Communication*.

### In Process

**Dunaev, J.**, Markey, C., & Brochu, P. You have to love yourself first? Examining the effects of a body gratitude intervention for body image improvement and internalized and explicit weight bias reduction. In process

**Dunaev, J., Brochu, P., & Markey, C.** Big, bold, and Beautiful? Examining the impact of exposure to counter-stereotypic overweight media models on levels of weight bias. In process.

**Dunaev, J., Brochu, P. & Markey, C.** Imagine that! Counter-stereotypic mental imagery reduces weight bias. In process.

\*Rivenbark, C., **Dunaev, J.**, & Markey, C. Big business: The interaction between body weight and occupational status on judgements of competence. In process.

Stevens, R., Gilliard-Matthews, S., **Dunaev, J.**, TodHunter-Reid, A., & Brawner, B. Seeking safe sex Information: Social media use and sexual health behavior among minority youth. In process.

## PRESENTATIONS

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### Chaired Conference Symposia

**Dunaev, J. & Brochu, P.** (2015, March). Understanding and reducing weight bias: Mechanisms and methods. Symposium co-chaired at the Annual Meeting of the Eastern Psychological Association, Philadelphia, PA.

Speakers: Jamie Dunaev, Paula Brochu, Afton Koball, Mary Himmelstein, and Jordan Schriver

### Conference Papers

1. **Dunaev, J., & Markey, C.** (2016, April). Can body size diversity promote body-positivity? Exposure to non-stigmatized overweight media models and body appreciation among late adolescents. In C.N. Markey (Chair), *The body positive: Exploring ways to improve body image across adolescence and into adulthood*. Symposium conducted at the meeting of the Society for Research on Adolescence, Baltimore, MD.
2. Schulz, J., **Dunaev, J.**, Bowler, G., Markey, C., & Markey, P. (2016, April). Preserving the positive: Body image and interest in cosmetic surgery among late adolescents and adults. In C.N. Markey (Chair), *The body positive: Exploring ways to improve body image across adolescence and into adulthood*. Symposium conducted at the meeting of the Society for Research on Adolescence, Baltimore, MD.
3. **Dunaev, J.**, Markey, C., & Brochu, P. (2015, March). Imagine that!: Counter-stereotypical mental imagery as a method for weight bias reduction. In J. Dunaev & P. Brochu (Chairs), *Understanding and reducing weight bias: Mechanisms and methods*. Symposium conducted at the meeting of the Eastern Psychological Association, Philadelphia, PA.
4. **Dunaev, J.** (2013, November). Tackling the big issues: Obesity, body-change behaviors, and weight bias in young adult literature. In B. J. Venable (Chair), *Food and Children's Literature*. Symposium conducted at the meeting of the Mid-Atlantic Popular Culture Association, Atlantic City, NJ.



5. **Dunaev, J.**, Stevens, R., & Gilliard-Matthews, S. (2013, November). *Knowing versus doing: Sexual health knowledge and its influence on the sexual behaviors of minority youth*. Paper presented at the meeting of the American Public Health Association, Boston, MA.
6. **Dunaev, J.**, Stevens, R., Gilliard-Matthews, S., Tadesse, G., & Woods, M. (2013, November). *The virtual hood: Social media use among youth living in disadvantaged neighborhoods*. Paper presented at the meeting of the American Public Health Association, Boston, MA.
7. **Dunaev, J.** (2012, May). *Learning to feel about the queer corporeal: Examining the role of children's literature in the transmission of weight bias*. Paper presented at the Visions and Voices of Childhood conference, Camden, NJ.

#### Conference Posters

(\*indicates student co-author)

1. **Dunaev, J.** & Markey, C. (2016, May). *You have to love yourself first?: Examining the effectiveness of a body image improvement intervention to reduce weight bias*. Poster session presented at the meeting of the Association for Psychological Science, Chicago, IL.
2. Rivenbark, C.\*, **Dunaev, J.**, & Markey, C. (2016, May). *Big business: The interaction between body weight and occupational status on judgements of competence*. Poster session presented at the meeting of the Association for Psychological Science, Chicago, IL.
3. Nanassy, A., **Dunaev, J.**, & Markey, C. (2016, May). *Facts or inspiration? Comparing the effects of factual information versus inspirational quotes on intentions to eat healthy and body satisfaction*. Poster session presented at the meeting of the Association for Psychological Science, Chicago, IL.
4. Wolinsky, A., **Dunaev, J.**, & Markey, C. (2016, April). *Slow and steady wins the race: An experimental investigation of graduate and simultaneous approaches to weight loss among late adolescent females*. Poster session presented at the Celebration of Graduate Student Research and Creative Activities, Rutgers University, Camden, NJ.
5. Rivenbark, C.\*, **Dunaev, J.**, & Markey, C. (2016, April). *A weighty matter: Body weight, job status, and competence*. Poster session presented at the Celebration of Undergraduate Student Research and Creative Activities, Rutgers University, Camden, NJ.
6. **Dunaev, J.** & Markey, C. (2016, April). *Body image, weight bias internalization, and weight bias reduction*. Poster session presented at the Celebration of Graduate Student Research and Creative Activities, Rutgers University, Camden, NJ.

7. Wolinsky, A., **Dunaev, J.**, & Markey, C. (2016, April). *An experimental investigation of graduate and simultaneous approaches to weight loss among late adolescent females*. Poster session presented at the meeting of the Society for Research on Adolescence, Baltimore, MD.
8. **Dunaev, J.**, & Stevens, R. (2016, March). *Seeking safe sex information: Social media use, gossip, and sexual health behavior among minority youth*. Poster session presented at the meeting of the Society for Adolescent Health and Medicine, Washington, DC.
9. **Dunaev, J.**, Schulz, J., & Markey, C. (2016, January). *Fear of negative appearance evaluation, body image, and cosmetic surgery attitudes among midlife women*. Poster session presented at the meeting of the Society for Personality and Social Psychology, San Diego, CA.
10. Stevens, R., Gilliard-Matthews, S., **Dunaev, J.**, & TodHunter-Reid, A. (2015, October). *Beyond Netflix & Chill: Social media use and sexual health behavior among minority youth*. Poster session presented at the meeting of the Center for AIDS Research: Social and Behavioral Sciences Research Network Conference, Baltimore, MD.
11. **Dunaev, J.**, Markey, C., & Brochu, P. (2015, May). *Big, bold, and beautiful?: Mixed effectiveness of counter-stereotypical representations of obese persons in the reduction of weight bias*. Poster session presented at the meeting of the Association for Psychological Science, New York City, NY.
12. **Dunaev, J.**, Markey, C., & Brochu, P. (2015, February). *Counter-stereotypical mental imagery and weight bias reduction*. Poster session presented at the meeting of the Society for Personality and Social Psychology, Long Beach, CA.
13. **Dunaev, J.**, Stevens, R., & Gilliard-Matthews, S. (2014, March). *Gender differences in the sexual decision making processes of minority youth: Findings from a qualitative study*. Poster session presented at the meeting of the Society for Research on Adolescence, Austin, TX.
14. **Dunaev, J.** (2012, October). *Weight loss intentions and behaviors among rural adolescents in the United States: Findings from the national longitudinal study of adolescent health*. Poster session presented at the meeting of the American Public Health Association, San Francisco, CA.

## RESEARCH EXPERIENCE

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Senior Research Assistant, 2015- present

Center for Health Equity Research, School of Nursing, University of Pennsylvania  
with Dr. Robin Stevens

*Graduate Research Associate, 2012-present*

Healthy Development Lab, Department of Psychology, Rutgers University-Camden  
with Dr. Charlotte Markey

*Graduate Research Associate, 2012- 2015*

EPIC Camden Study, School of Nursing, University of Pennsylvania; Department of Childhood Studies, Department of Sociology, Anthropology, and Criminal Justice, Rutgers University-Camden  
with Dr. Robin Stevens and Dr. Stacia Gilliard-Matthews

*Health and Higher Education Research Internship, Summer 2015*

The Rowan University-Rutgers Camden Board of Governors

*Research Consultant, Spring 2015*

New Jersey Health Initiatives, Robert Wood Johnson Foundation

*Project Director, Summer 2012*

The Navigator Study, Rutgers University-Camden  
with Dr. Robin Stevens and Dr. Stacia Gilliard-Matthews

*Research Assistant, 2007-2008*

Appalachian History and Medical Anthropology Project, Department of Sociology and Anthropology, East Tennessee State University  
with Dr. Melissa Schrift

## **TEACHING AND MENTORSHIP**

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### **Instructor: Rutgers University-Camden**

Introduction to Health Psychology (Summer 2016)

Introduction to Health Sciences (Spring 2016)

Research Methods in Psychology

Mean Instructor Evaluation in Fall 2014= 4.9/5.0

Understanding Childhood through Statistics

Mean Instructor Evaluation in Summer 2014= 5.0/5.0

Mean Instructor Evaluation in Spring 2014= 4.5/5.0

Mean Instructor Evaluation in Fall 2013= 4.0/5.0

### **Mentorship**

*Adviser, (2015-2016), Caitlin Rivenbark's Undergraduate Honor's Thesis, Rutgers University-Camden*

*Title: Weight discrimination in the workplace: The effect of body-size perceptions on ratings of competence*

### **Teaching Assistant: Rutgers University- Camden**

Childhood and Migration (Spring 2012)

Special Topics in Sociology: Qualitative Methods for Research on Camden Housing  
(Spring 2011)

Sociology of Education (Fall 2010)

### **Invited Guest Lectures**

*Weight Bias Reduction & Experimental Research* (2015)

Course: Understanding Childhood through Statistics, Rutgers University-Camden

*Body Image and Eating Disorders* (2015)

Course: Adolescent Psychology, Rutgers University-Camden

*Body Image and Children's Media* (2013)

Course: Children's Media Cultures, Rutgers University-Camden

*Social Capital and Education* (Fall 2011)

Course: Global Childhoods, Rutgers University-Camden

## **METHODOLOGICAL TRAINING**

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### **Advanced Quantitative Training**

*BayesFactor and JASP: A Fresh Way to Do Statistics*, Richard D. Morey, Spring 2016

*Structural Equation Modeling with Lavaan*, Yves Rosseel, Spring 2016

*Interactions in Linear Regression Analysis*, Andrew Hayes, Statistical Horizons, Spring 2016

*Epidemiology: The Basic Science of Public Health*, Karin Yeatts, The University of North Carolina at Chapel Hill, Spring 2016 (online).

*Introduction to Structural Equation Modeling*, Paul Allison, Statistical Horizons, Fall 2015

*Data Science Specialization*, Johns Hopkins University (online), Topics covered: R programming, statistical inference, complex regression models, Fall 2015

*Introduction to Structural Equation Modeling*, Greg Hancock, Spring 2015

*Longitudinal Data Analysis, Including Categorical Outcomes*, Donald Hedeker, ICPSR, University of Michigan, Summer 2015

*Statistics and Research Design for Psychology*, J.J. Cutuli, Rutgers University, Camden, Fall 2015

*Quantitative Methods II*, Paul Jargowsky, Rutgers University-Camden, Spring 2013

### **Advanced Qualitative Training**

*Cyber-ethnography*, Todd Wolfson and Joe Sanchez, Rutgers University, New Brunswick, Fall 2011

*Interpretive Methods*, Lauren Silver, Rutgers University, Camden, Spring 2011

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## TECHNICAL SKILLS

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Stata, SPSS, SAS, R, Atlas.ti

## ONLINE SCHOLARLY CONTRIBUTIONS

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*10 Fantastic Food and Fitness Quotes*, blog co-authored with Dr. Charlotte Markey, Psychology Today, <https://www.psychologytoday.com/blog/smart-people-don-t-diet/201509/10-fantastic-food-and-fitness-quotes>

## MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

---

Society for Adolescent Health and Medicine (SAHM)  
 Association for Psychological Science (APS)  
 American Public Health Association (APHA)  
 Society for Personality and Social Psychology (SPSP)  
 Society for Research on Adolescence (SRA)  
 Eastern Psychological Association (EPA)  
 Mid-Atlantic Popular Culture Association (MAPCA)

## SERVICE

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### University

*The Graduate School Strategic Planning Taskforce*, Spring 2016, Rutgers University-Camden  
*Graduate Student Advisory Council Member*, Fall 2015-Spring 2016, Rutgers University-Camden  
*Graduate Student Health Psychology Faculty Search Committee Member*, Fall 2015, Rutgers University-Camden  
*President, Member, 2011- present*, Childhood Studies Graduate Student Organization, Rutgers University-Camden  
*Conference Planning Committee Member*, 2011-2012, Voices and Visions of Childhood conference, Rutgers University-Camden

### Profession

*Association for Psychological Science Student Grant Competition Reviewer*, Fall 2015  
*Society for Personality and Social Psychology Research Award Reviewer*, Fall 2015  
*Society for Research on Adolescence Conference Abstract Reviewer*, Fall 2015

### Community

*Corps Member*, 2009-2010, City Year Greater Philadelphia (AmeriCorps)  
*Vice President of Service, Member*, 2004-2008, Alpha Phi Omega co-ed national service fraternity, East Tennessee State University

## MEDIA COVERAGE

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*Science Daily*, (Feb., 2016) Is there a digital hood? Disadvantaged youth can't get away from negative interactions, whether on the street or online.  
<https://www.sciencedaily.com/releases/2016/02/160218115016.htm>

*Philly.com*, (Mar., 2016) 'Digital hood' has frightening aspects.  
[http://www.philly.com/philly/health/20160304\\_Penn-Rutgers\\_study\\_quot\\_Digital\\_hood\\_quot\\_a\\_frightening\\_place.html](http://www.philly.com/philly/health/20160304_Penn-Rutgers_study_quot_Digital_hood_quot_a_frightening_place.html)

## REFERENCES

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Robert Atkins, PhD, RN, FAAN  
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 New Jersey Health Initiatives--Robert Wood Johnson Foundation  
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 323 Cooper Street  
 Camden, NJ 08102-1519  
 atkins@njhi.org  
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Charlotte N. Markey, Ph.D.  
 Professor of Psychology  
 Director, Health Sciences  
 Rutgers University  
 311 N. 5th Street  
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Robin Stevens, PhD, MPH  
 Assistant Professor of Nursing  
 University of Pennsylvania School of Nursing  
 Center for Health Equity Research  
 Director, Health Equity & Media Lab  
 Senior Fellow, Penn Center for Public Health Initiatives  
 418 Curie Blvd., 231L  
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 robin2@nursing.upenn.edu  
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