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2016

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UNIVERSITY OF CALIFORNIA,
IRVINE

The Moralization of Obesity: Exploring Control Attributions and Disgust as Predictors of
Judgments about Obesity

THESIS

submitted in partial satisfaction of the requirements
for the degree of

MASTER OF ARTS

in Social Ecology

by

Megan Marie Ringel

Thesis Committee:
Professor Peter H. Ditto, Chair
Assistant Professor Jacqueline M. Chen
Assistant Professor Paul K. Piff

2016

DEDICATION

This thesis is dedicated to my husband, Charles. I could not have made it this far without his tireless love and support. I also dedicate this work to some stellar friends in graduate school, particularly Joanna and Amy, as well as my Hot Cognition lab mates, especially Eric Chen. Their help, kindness, and encouragement have meant the world to me these last two years.

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ACKNOWLEDGMENTS

I would like to express my profound gratitude to my committee chair and primary advisor, Professor Peter Ditto. This dissertation would not have been possible without him. He was a constant source of guidance and encouragement throughout this process. His sincere passion for scientific research is inspiring. I am truly grateful to have Pete as a friend and mentor.

I would also like to thank my committee members, Professor Jacqueline Chen and Professor Paul Piff, for their insight and guidance during the development of this work. Additionally, I would like to acknowledge that, as my second reader for this project, Professor Chen provided excellent feedback on earlier drafts of this thesis as well as a previous class paper related to this research.

Finally, I owe a great debt of gratitude to the Department of Psychology and Social Behavior, and particularly our graduate advisor Dr. Roxane Cohen Silver, for giving me the opportunity to be part of this wonderful community of scholars here at UC-Irvine.

ABSTRACT OF THE THESIS

The Moralization of Obesity: Exploring Control Attributions and Disgust as Predictors of
Judgments about Obesity

By

Megan Marie Ringel

Master of Arts in Social Ecology

University of California, Irvine, 2016

Professor Peter H. Ditto, Chair

Research shows that negative attitudes toward obese people are pervasive and difficult to change
(Puhl & Heuer, 2009). The present research was designed to expand our understanding of why
obesity attitudes are so entrenched by investigating the extent to which people make moral
judgments about obesity. Negative moral evaluations about obesity were hypothesized to
positively predict greater control attributions for obesity and disgust reactions toward obese
people. It was also hypothesized that moralization of obesity is associated with downstream
consequences such as endorsement of discrimination against obese people, inflated estimation of
health risks associated with obesity, and the perception of general moral weakness in obese
persons. Two studies were conducted, each with samples from YourMorals.org and a college
student population. Study 1 supported the hypotheses and found that, across both samples,
greater moralization was positively associated with control attributions, disgust, and the
proposed consequences of moralization. Study 2 tested the hypothesis that moralization of

obesity is in part caused by the belief that obesity is controllable. Participants were randomly assigned to one of two conditions in which they read a brief introduction to the survey that emphasized that obesity is largely controllable or uncontrollable. The results from both samples indicated that the manipulation failed to significantly decrease control attributions and thus Study 2 did not provide an adequate test of the causal link between control attributions and moralization. The implications of these findings and directions for future research are discussed.

Keywords: obesity, attitudes, morality, moral coherence

INTRODUCTION

Negative attitudes toward obese people are pervasive in the U.S. and many other societies, resulting in stereotyping of and discrimination against obese individuals that manifests itself in various ways (Puhl & Heuer, 2009; Vartanian, Thomas, & Vanman, 2013). Studies show that obese persons experience weight-related interpersonal and mental health problems, weight-based employment discrimination, and biased treatment from healthcare professionals (Puhl & Heuer, 2009). There is also some evidence that obese individuals receive harsher punishments for certain crimes (Masicampo, Barth, & Ambady, 2014), as well as experimental research which demonstrated that jurors judge obese female defendants more negatively—and are more likely to find them guilty—than nonobese female defendants or male defendants of any weight (Schvey, Puhl, Levandoski, & Brownell, 2013). Policy decisions can also be affected by negative attitudes toward obese persons. For example, a study in which participants imagined themselves in a policymaker role within a company found that participants with stronger implicit overweight bias preferred policies that stigmatized obese people, even when the policies were objectively less cost effective than non-stigmatizing policies (Tannenbaum, Valasek, Knowles, & Ditto, 2013). Thus, people with obesity face discrimination across a number of domains.

Discrimination against obese individuals appears to be driven at least in part by beliefs that obese people are less motivated, self-disciplined, and competent than nonobese people (Puhl & Brownell, 2003). Notably, research indicates that negative attitudes toward obese people are particularly difficult to change (e.g., Flint, Hudson, & Lavallee, 2013; Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003). The present research was designed to expand our understanding of why obesity attitudes are so entrenched and why moral judgments may be

important to consider when examining real-world implications of obesity attitudes, such as

obesity-related discrimination and public policies on obesity treatment and prevention.

CHAPTER 1

Attitudes Toward Obesity and Perceived Control

Importantly, studies have demonstrated that negative attitudes toward obese people are strongly linked to the belief that obesity itself is controllable (e.g., Crandall, 1994; DeJong, 1980; Vartanian, 2010). In his seminal paper on what he termed "antifat" attitudes, Crandall (1994) proposed that prejudice against overweight people stems primarily from an ideology that prioritizes the Protestant work ethic and motivates discrimination against people who appear to violate values of hard work and self-control. In essence, Crandall theorized that some people are motivated to attribute control to people with obesity as a way of reinforcing their worldview, which is characterized by the beliefs that anything can be achieved with hard work and that people get what they deserve. When applied to body weight, this worldview specifies that obese individuals should be capable of achieving normal weight through hard work and discipline.

To determine the degree to which attributions of control relate to negative attitudes toward overweight people, Crandall created the Antifat Attitudes (AFA) questionnaire. The AFA questionnaire captures three dimensions: dislike of fat people, fear of becoming fat, and willpower (i.e., belief that people are fat because they lack willpower). He found that willpower was positively correlated with dislike of overweight people (study 1: $r = .43$), and this finding has been replicated numerous times in the literature both with the AFA scale and with conceptually similar attitude measures (Allison, Basile, & Yuker, 1991; Lewis, Cash, Jacobi, & Bubb-Lewis, 1997; Vartanian, 2010). In the same article, an experimental study exposed half of the participants to a persuasive essay that argued that obesity is not a function of self-control, and then administered the AFA scale to all participants. Participants who read the persuasive essay

scored significantly lower on the dislike and willpower subscales, which suggest that negative attitudes toward obese people are causally linked to the belief that obesity is controllable.

Other research has likewise found that control attributions play a central role in attitudes toward obese persons (e.g., Allison et al., 1991; Tiggeman & Anesbury, 2000). For example, experimental studies found that formerly obese targets (i.e., currently thin people who were obese in the past) still elicited obesity stigma because their weight loss history reinforced participants' belief in the controllability of obesity (Geier, Schwartz, & Brownell, 2003; Latner, Ebneter, & O'Brien, 2012). It should also be noted that despite Crandall's (1994) successful manipulation of antifat attitudes via control attributions, as well as other studies that have demonstrated the importance of beliefs about control in antifat attitudes, some studies have failed to persuade participants that obesity is uncontrollable (Pearl & Lebowitz, 2014; Teachman et al., 2003). For example, Pearl and Lebowitz (2014) gave participants a persuasive essay highlighting either biological, personal responsibility, or environment-related causes of obesity. Participants in the biological causes condition did not show a decrease in negative attitudes toward obese people and did not demonstrate greater support for obesity prevention policies or anti-discrimination policies. Another study found that negative implicit obesity attitudes were not affected by an experimental manipulation of control attributions, which suggests that unconscious bias against obese people is particularly difficult to change (Teachman et al., 2003). Other studies, despite presumably successful manipulations of control attributions, were not effective in reducing participants' negative attitudes toward overweight people (e.g., Bell & Morgan, 2000; Harris, Walters, & Waschull, 1991). In sum, research generally supports the link between control attributions and negative attitudes toward obesity, but numerous studies

demonstrate that it is difficult to change people's beliefs about the controllability of obesity, and difficult to change negative attitudes about obese people more generally.

Obesity and Moralization

Why are negative attitudes toward obese people so intractable? One possible reason is that people who hold negative obesity attitudes also view obesity as morally wrong. Attitudes become moralized when they transition from mere preferences to value judgments of an object or behavior as right or wrong (Rozin, 1999). As such, moralized attitudes about obesity may create greater stigmatization of obese people at the individual and societal level. Rozin (1999) contends that a number of important societal changes occur when attitudes become moralized, including public information campaigns and interventions aimed at eliminating the unwanted behavior, sponsored by governments and other institutions; cultural acceptance of censuring people who demonstrate the morally unacceptable behavior; and strong parent-to-child transmission of the moralized attitude. Rozin (1999) also argues that moralized attitudes are particularly likely to develop in health domains because, historically, physical health conditions have been linked with moral character evaluations. Essentially, believing that an individual caused his or her ill health justifies making a negative moral judgment about the individual. For example, cigarette smoking has become moralized in recent years, as evidenced by Rozin and Singh's (1999) research demonstrating that cigarette smokers evoke disgust and moral condemnation from nonsmokers.

The present research proposes that attitudes toward obesity have become similarly moralized. The content of antifat attitudes suggests that moral evaluation underlies negative attitudes toward obese people. Of principal importance is the belief that weight is controllable, which tends to be highly correlated with negative obesity attitudes (Crandall, 1994). Considerable research in moral psychology, as well as normative theories of blame and

ascription of responsibility, demonstrate that people assign blame when an individual is seen as having control over a harmful outcome (Ditto, Pizarro, & Tannenbaum, 2009). Individuals seen as personally responsible for a negative outcome are also judged as more morally unsavory than people who unintentionally caused the negative outcome (Clark, Chen, & Ditto, 2015). In essence, negative moral judgments are typically reserved for when an individual is perceived as having control over, and intentionally causing a negative outcome, or if a person is perceived as capable of preventing harm but failed to prevent it. Blame is reduced when a moral agent is seen as less causally responsible for a negative outcome (Shaver, 1985). If obesity is viewed as a harmful or undesirable state, and obesity is seen as a controllable condition that is caused by the individual's undesirable behaviors, it is reasonable to hypothesize that obese individuals engender moral condemnation from those who believe that people with obesity have control over their stigmatizing condition.

Obesity and Disgust

Another potential contributor to moral judgments of obesity is the emotion of disgust. Disgust is an emotion typically elicited by certain types of stimuli, such as those associated with unpleasant smells or tastes, certain sexual acts, and disease (Oaten, Stevenson, & Case, 2009). Rozin and colleagues propose that disgust evolved as a cue to help humans avoid harmful contaminants or behaviors that could decrease their evolutionary fitness (Rozin, Haidt, & Fincher, 2008). This oral rejection theory of disgust posits that the disgust response was co-opted over time as a precipitator of moral judgments because disgust is an efficient way to detect threats from contaminants and other dangerous stimuli. Furthermore, moral prohibitions are an effective tool for ensuring avoidance of potential threats to the self or group. Although there have been mixed findings in the literature (Landy & Goodwin, 2015), many studies have found

disgust to be a predictor of certain purity-related moral judgments, particularly among people with less education or more culturally conservative values (Rozin, Lowery, Imada, & Haidt, 1999). For example, Rozin and Singh (1999) found that disgust was a greater predictor of moral judgments of smoking than perceptions of smoking-related health risks. Similarly, some research has linked disgust with negative attitudes toward obese people. Park, Schaller, and Crandall (2007) proposed that just as we see evidence for a "behavioral immune system" in people's natural inclinations to avoid individuals with superficial disease cues (e.g., skin problems, disfigurement, coughing behavior), obesity also acts as a disease cue that elicits disgust and avoidance reactions. Park and colleagues found that greater desire to avoid pathogens predicted more negative attitudes toward obese people, and that this effect was independent of the significant effect of willpower attributions. Other studies have also found support for pathogen avoidance as a predictor of antiobesity attitudes (Lieberman, Tybur, & Latner, 2012; Park & Isherwood, 2011), but the results have not been uniform across studies. For example, Lieberman and colleagues (2012) found that pathogen disgust sensitivity predicted antiobesity attitudes for women (but not men), and found that generalized moral and sexual disgust sensitivity did not predict stronger antiobesity attitudes for men or women. Moreover, the Perceived Vulnerability to Disease scale (Duncan, Schaller, & Park, 2009), which is conceptually similar to the pathogen disgust measure (but does not explicitly measure disgust), was not predictive of antiobesity attitudes. The results for moral disgust sensitivity might also seem counter-intuitive, but as the authors admit, their measures did not tap moral concerns that are specifically related to obesity, such as self-control or laziness. The mixed findings in this area suggest that more research is needed to understand the role of disgust in negative attitudes toward, and moral judgments of, obese people.

Moral Coherence Processes

The roles of control attributions and disgust in moral judgments about obesity may best be understood through the lens of moral coherence processes. Normative theories of moral responsibility postulate that people make negative judgments about an individual if the individual is determined to be causally responsible for a harmful outcome (Shaver, 1985; Weiner, 1995). Thus, moral decision makers strive to make moral judgments of people who can reasonably be held responsible for their actions, and adjust their judgments when a perpetrator is perceived as not having sufficient control over their actions to be considered blameworthy. A moral coherence view agrees with this account, but it situates moral judgments within the context of the motivation for consistency. Moral coherence posits that people are motivated to achieve cognitive consistency, and will go so far as to align their factual beliefs with their moral judgments in order to satisfy the need for a coherent worldview (Clark et al., 2015). In contrast to normative theories, which propose that people rationally assess a perpetrator's causal role in a situation and then arrive at an appropriate moral judgment following that assessment, moral coherence suggests that this inference process can operate in the reverse as well. In other words, moral coherence posits that moral decision makers sometimes judge a person as morally bad and then search for evidence of the person's blameworthiness to justify the initial judgment. Thus, a fundamental feature of moral coherence processes is that they posit bidirectional influence between judgment elements (Clark et al., 2015). In support of this assertion, experimental studies show that people attribute greater control to individuals when they are motivated to blame the individual for a harmful outcome (Alicke, 1992; Alicke, 2000; Alicke, Rose, & Bloom, 2011). For example, Alicke (1992) found that participants who read about a person involved in an auto accident during a rainstorm arrived at different judgments about the person's culpability based

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on the circumstances. When the driver was described as rushing home to hide cocaine from his parents, participants attributed more control over the accident to him than when he was described as rushing home to hide his parents' anniversary gift. Other research demonstrates that people sometimes alter their factual beliefs to cohere with their moral judgments. For example, Liu and Ditto (2013) experimentally manipulated participants' moral stance on the death penalty and found that participants shifted their factual beliefs about the efficacy of the death penalty as a crime deterrent to align with their moral views, even though the manipulation contained no factual information about the death penalty.

To the extent that people desire to have their moral judgments fit their factual beliefs and judgments about causal control, it is reasonable to propose that moral coherence processes may be at work in moral judgments of obesity. For instance, people may make negative moral judgments about obese people because they believe that obesity is controllable. It is also possible that the process flows in the other direction, such that people may first have disgust reactions to obesity that inspire moral condemnation, following which people strengthen their conviction that obesity is controllable in order to justify their initial moral judgment. Moral coherence also suggests that negative moral evaluations of obesity should lead to greater belief that obesity has negative consequences. The present research was designed to investigate that contention, such that people who moralize obesity, compared to those who do not, were expected to associate obesity with a variety of harmful consequences.

Consequences of Obesity Moralization

Some articles have acknowledged the moral overtones of obesity attitudes (Lieberman et al., 2012; Masicampo, Barth, & Ambady, 2014; Townend, 2009), but little psychological research has empirically examined moral judgments of obesity. Consequently, research has yet to

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explore the implications of moralization in this domain. Moralized attitudes in general have been shown to predict—independent of other attitude strength indicators—a desire for greater social and physical distance from, as well as greater intolerance of, people who are judged as morally unsavory (Cole Wright, Cullum, & Schwab, 2008; Skitka, Bauman, & Sargis, 2005). Other research has found that when people hold a moral conviction about a given issue, they are less susceptible to persuasion and conformity pressures in a group setting in which the majority oppose their view (Aramovich, Lytle, & Skitka, 2012). Experimental studies in which people were led to believe that an attitude they held was based in morality (as opposed to non-moral concerns) similarly demonstrated that perceived moral basis of attitudes resulted in greater resistance to persuasion and stronger attitude-behavior correspondence (Luttrell, Petty, Briñol, & Wagner, 2016). Another possible consequence of moralized attitudes is that when an attitude object or group of people acquire a negative moral status, people are more likely to feel justified in publicly demonstrating their contempt of the moralized target (Rozin, 1999). Taken together, the implications of these findings are that people who hold moralized obesity attitudes may be more likely than those with nonmoralized attitudes to express prejudice toward and discriminate against obese people, whether in public or private, because they feel their views of obese people are morally justified. People with moralized obesity attitudes may also be less amenable to altering their negative attitudes toward obese people or their beliefs about the causes of obesity. People who moralize obesity may also be less supportive of public policies or funding aimed at treating obesity, as some studies indicate that people oppose policies perceived to benefit those seen as less deserving of publicly funded assistance (e.g., Barry, McGinty, Pescosolido, & Goldman, 2014; Hilbert, Rief, & Braehler, 2008; Lund, Sandøe, & Lassen, 2011).

Moralized attitudes may also have significant consequences for health-related risk perceptions of obesity. Moralization is associated with an exaggeration of the risks or negative consequences of the moralized behavior (Rozin, 1999). Similarly, studies on moral coherence processes show that people strive for cognitive consistency by altering their factual beliefs about an action's consequences to fit their moral judgments (Liu & Ditto, 2013). It may be that people who judge obesity as morally wrong also perceive obesity to have greater health risks, compared to people who do not moralize obesity. Research would benefit from exploring the relation between moral judgments and health risk perceptions of obesity, as it may have significant implications not only for interpersonal interactions with obese people but also health professionals' treatment of obese patients.

Moralized obesity attitudes may also influence perceptions of obese individuals' general moral character. The moral aspects of a person's character are thought to be particularly important in perceptions of others, because good moral character signals that a potential interaction partner is trustworthy (Goodwin, Piazza, & Rozin, 2014). Do people who moralize obesity also judge obese people as less moral in general? Stereotypes commonly associated with obese people include lazy, unreliable, self-indulgent, and difficult to get along with (Bacon, Scheltema, & Robinson, 2001; Lewis et al., 1997). Moral psychology research classifies these traits as aspects of moral character (Goodwin et al., 2014). Given this overlap, it may be the case that moral judgments of obese individuals are not simply confined to perceived weight-related traits such as self-control, but rather spread to inferences about moral traits like trustworthiness and kindness. Investigating these moral trait inferences may expand our understanding of negative attitudes toward obese people and weight-based discrimination.

Overview of the Present Studies

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Research on antiobesity attitudes may benefit substantially from exploring the moralization of obesity and the implications of moralized attitudes. The current research proposed that greater belief in the controllability of obesity, as well as stronger disgust-based reactions to obesity, are significant components of moral judgments of obesity. As outlined previously, moralization may also have important downstream consequences such as greater discrimination, enhanced perception of the health risks of obesity, and negative evaluations of the moral character of obese persons. These hypothesized relationships were explored in greater detail in the present studies. It was hypothesized that people who hold stronger moralized attitudes toward obesity would be more likely to believe that obesity is a function of personal responsibility. It was also hypothesized that greater moralization would predict greater feelings of disgust toward obese persons, endorsement of discrimination against obese persons, greater association of health risks with obesity, and association of obese persons with generalized moral weakness. Studies 1a and 1b were designed to explore these hypothesized relationships correlationally with participants from an online sample (Study 1A) and an ethnically diverse college student sample (Study 1B). Following the correlational studies, a second set of studies tested the hypothesis that moralized views of obesity are caused in part by the belief that obesity is controllable. To investigate its effect on moral judgments about obesity, studies 2A (online community sample) and 2B (college student sample) introduced an experimental manipulation intended to influence participants' beliefs about the controllability of obesity. It was hypothesized that reducing belief in the controllability of obesity would lead to less moralized attitudes toward obesity. Each study was conducted with two samples to test the replicability of the findings, as well as explore whether attitudes toward obesity differ in a more culturally diverse U.S. sample.

CHAPTER 2

Study 1A: Moral Judgments of Obesity in an Online Sample

Method

     Participants. Participants were 1156 visitors to YourMorals.org (YM), which is an online research platform that features short studies and questionnaires related to topics of morality, politics, and personality. Thirteen participants failed the single-item attention check and were excluded from analysis.[1] The final sample consisted of 677 men, 477 women, and 2 participants who did not report their gender. The mean age of the sample was 39.5 years (age range: 18-80 years) and their mean body mass index (BMI), which was calculated using participants' self-reported height and weight, was 26.2 ($SD = 6.19$).[2] Studies on YourMorals.org are open to visitors around the world, but the majority of the sample (93%) identified as living in Western countries (76% in the U.S.). Visitors to the site are given the choice of providing certain demographic information such as race; among the 620 who answered the race question, most identified as Caucasian (79.5%).

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[1]The attention check was placed at the and of the first page of study questions and asked participants to select "No" to the attention check statement. For studies 1B, 2A, and 2B, the attention check was included within the section of discrimination-related attitude items and asked participants to "choose strongly disagree for this item to show you're paying attention." This attention check was likely more difficult than the attention check in study 1A because the wording was subtler and it was embedded within a list of items rather than being placed at the end of the page of measures. This might explain why fewer participants failed the attention check in study 1A compared to the other three studies.

[2]Standard ranges for BMI (CDC, 2015): below 18.5 = underweight, 18.5 – 24.9 = normal or healthy weight, 25.0 – 29.9 = overweight, 30.0 and above = obese.

Procedure and materials. Visitors to YourMorals.org (YM) volunteered for a study advertised as a survey of "attitudes toward obesity." Participants did not receive monetary compensation for their time. After accessing the study link and reading the informed consent form, participants completed the various measures (detailed below). The measures we presented to participants in the same order as they are listed in this section (i.e., beginning with the moralization measure and ending with the moral traits measure).

Moralization of obesity. Participants used a 7-point scale (1 = strongly disagree, 7 = strongly agree) to indicate their agreement with eight statements (order randomized) related to the morality of obesity. Seven of the eight items were created for the purposes of this study. The eighth item, "I would have no objection to my son or daughter marrying an obese person," was adapted from a questionnaire by Rozin and Singh (1999). The other moralization items included the following statements: "Obesity is a moral failing," "Obesity is a sign of personal weakness," "A person should treat his or her body like a temple," "Obesity is NOT a moral issue," "Thinness is a moral virtue," "Gaining an excessive amount of weight is disrespectful to one's body," and "Maintaining control over one's weight is a moral issue." Two items, "Obesity is NOT a moral issue" and the 'marrying an obese person' item, were reverse-coded prior to analysis. A *moralization* score was computed for each participant by averaging the responses across the eight items ($\alpha = .86$).

It should be noted that two moralization items ("Obesity is a sign of personal weakness," and "Maintaining control over one's weight is a moral issue") may overlap conceptually with the measure of perceived control. However, analyses conducted with and without those items demonstrated highly similar results, suggesting that the overlap is not problematic for the interpretation of the results throughout the studies (see Tables B1 and B2 in Appendix B for

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analyses that excluded the two control-related items from the moralization composite score).

Thus, the full moralization scale was used in all subsequent analyses.

Emotions. Participants responded to three questions (adapted from Masicampo et al., 2014) that asked, "To what extent do you feel [disgust/contempt/compassion] when you think about obese people?" Participants stated how much disgust, contempt, and compassion they felt on a 5-point scale (1 = not at all, 5 = a great deal). The present study focused on disgust, and included the other emotion items mainly to reduce participants' suspicion and encourage honest responding. The items were treated individually in order to analyze the extent to which individual emotions, particularly disgust, were associated with the other study measures.

Controllability of obesity. Participants responded to five statements on a 5-point scale (1 = strongly disagree, 5 = strongly agree) related to the causes of obesity. Four items were taken from the Beliefs About Obese Persons Scale (Allison et al., 1991): "In many cases, obesity is the result of a biological disorder" (reverse-scored); "Obesity is usually caused by overeating;" "Most obese people cause their problem by not getting enough exercise;" "Obesity is rarely caused by a lack of willpower" (reverse-scored). A fifth item was created for the purposes of this study: "Obese people generally have less self-discipline than normal weight people." Although the 5-item measure demonstrated acceptable reliability in this sample ($\alpha = .74$), a 4-item version of the scale demonstrated better reliability in the student samples (study 1B α improved from .60 to .66 and study 2B α increased from .59 to .63). Thus, a composite score was generated without the 'biological disorder' item in order to keep the controllability measure consistent across the four studies. A *perceived control* score was computed for each participant by averaging the responses across the four remaining items ($\alpha = .74$).

Discrimination. Participants responded to four items related to different aspects of obesity-relevant discrimination, measured on a 5-point scale (1 = strongly disagree, 5 = strongly agree). One item was adapted from Crandall's (1994) antifat attitudes scale: "If I were an employer looking to hire, I might avoid hiring an obese person." Another item was adapted from McConahay's (1986) Modern Racism Scale: "Discrimination against obese people is a serious problem" (reverse-coded). The other two items were written for the purposes of this study: "Obese people should NOT pay more for healthcare than non-obese people" (reverse-coded); "Taxpayers should NOT have to pay for healthcare costs associated with obesity." A *discrimination* score was computed for each participant by averaging the responses across the four items ($\alpha = .76$).

Perceived health risks. Participants were asked to rate obese people's risk (compared to non-obese people) of experiencing ten different health conditions (order randomized). The conditions were rated on a 7-point scale (1 = much lower risk than non-obese people, 7 = much higher risk than non-obese people). The items were designed to vary in the degree to which medical evidence suggests they are associated with obesity. Four items (cancer, high blood pressure, Diabetes, and heart disease) are commonly associated with obesity, whereas five of the items (migraines, dry mouth, appendicitis, allergies, Graves' Disease) are less (or not at all) associated with obesity (CDC, 2015). Finally, a fictional health condition ("Nerys Syndrome") was included in order to assess whether moralization positively predicted perceptions of obesity's health risks even for an unknown health condition.

Because the health risk measure was intended to capture two categories of health problems—some more strongly related to obesity, and others that are less or not at all associated with obesity according to medical evidence—factor analysis was conducted to confirm the

validity of dividing the scale into these two proposed factors. A principal axis factor analysis was conducted on the 10 items with oblique rotation. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .82, and all of the items had KMO values equal to or greater than .77. Two factors had eigenvalues over Kaiser's criterion of 1 and in combination explained 53.65% of the variance. The items that clustered on the same factor confirmed that one factor represents health conditions that are more highly associated with obesity (cancer, high blood pressure, Diabetes, and heart disease), whereas the other factor represents conditions with lower associations with obesity. The two factors, *high association risks* and *low association risks*, yielded acceptable Cronbach's alphas of .73 and .78, respectively. The fictional health condition was included in the low association risks factor. It was also evaluated separately in additional analyses in studies 1A and 1B to confirm the hypothesis that moralization would positively predict stronger risk ratings of an unfamiliar health condition. Mean scores for the high association and low association health risks factors were computed for each participant by averaging the responses across the items for each factor.

   Positive and Negative Moral Character Evaluations. Participants used a 7-point scale (1 = much less characteristic of obese people, 7 = much more characteristic of obese people) to indicate how much they associate 16 items (order randomized) representing positive and negative traits and behaviors with obese people. The measure was created for the purposes of this study and was intended to capture associations of obese people with positive and negative traits related to moral character. Fourteen items (6 positive, 8 negative) were relevant to morality. Two items, *happy* and *intelligent*, were included as measures of endorsement of common obesity stereotypes, but were not central to the purposes of this study. Furthermore, inclusion/exclusion of these items did not alter the overall pattern of results, and initial factor analyses demonstrated

that removal of the two items did not change the underlying factor structure of the moral character scale. Thus, these non-morality items were not included in the measure but were retained for separate analysis. The morality items included *cheats on relationship partner*, *substance abuse problems*, *gambling problems*, *alcohol problems*, *loses temper easily*, *spends money irresponsibly*, *cheats on taxes*, *watches pornography*, *contributes equally to group work*, *trustworthy*, *generous to others*, *kind to others*, *family-oriented*, and *respectful of authority*.

A principal axis factor analysis with oblique rotation was conducted on the 14 morality items to confirm the statistical validity of dividing the measure into positive moral traits and negative moral traits. The "cheats on relationship partner" item demonstrated poor factor loadings when the measure was split into two factors. Additionally, a three-factor solution yielded a 2-item factor with the 'cheats on partner' and "cheats on taxes" items that demonstrated poor reliability ($\alpha = .41$). Thus, the 'cheats on partner' item was removed from further analyses, and the remaining 13 items were factor analyzed. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .82, and all of the items had KMO values equal to or greater than .76. An initial analysis was conducted to obtain eigenvalues for each factor in the data. Three factors had eigenvalues over Kaiser's criterion of 1. However, the scree plot and the marginal eigenvalue of the third factor (1.008) justified retaining either two or three factors, and reliability analyses indicated higher reliabilities (>.70) for the two factors compared to analyses of the three factors. Thus, two factors were retained and in combination explained 46.43% of the variance. The items that cluster on the same factor suggest that one factor represents positive moral traits (generous, kind, trustworthy, family-oriented, respectful of authority, contributes equally to group work), whereas the other factor represents negative moral traits (alcoholism, substance abuse, gambling, pornography

consumption, loses temper easily, spends money irresponsibly, and cheats on taxes). The two factors, *positive moral traits* and negative *moral traits*, yielded acceptable Cronbach's alphas of .80 and .75, respectively. Mean scores for the positive moral traits and negative moral traits factors were computed for each participant by averaging the responses across the items for each factor.

Personal experiences with obesity. Participants also responded to questions about their personal experiences with obesity. Participants were asked to provide their height and weight for calculation of their individual BMI. Participants were also asked to indicate "Yes" or "No" to two additional questions: "Do you have a family member who is obese?" and "Do you have a close friend who is obese?".

Results

Correlations. Initial analyses examined the pairwise correlations between the major study measures (Table 2.1). Moralization was significantly correlated with all main measures. As expected, the largest correlations with moralization were for perceived control, discrimination, and disgust ($.49 \leq r \leq .60$). The correlations with the health risks factors, negative moral traits, and positive moral traits were small-to-moderate in size ($.20 \leq r \leq .31$). Notably, perceived control and disgust were moderately correlated, and both variables correlated significantly with all other measures. Overall, correlations were of the expected strength and direction, which supports the validity of the measures used in this study.

Potential control variables were also investigated for their correlations with the main study measures (Table 2.2). Previous studies have found that men and political conservatives on average report more negative attitudes toward obese people (e.g., Crandall, 1994; Park & Isherwood, 2011), as well as people with lower BMI (Schwartz, Vartanian, Nosek, & Brownell,

2006). The present study found similar associations. Correlations with gender indicated that men generally reported more negative attitudes than women toward obese people. Gender differences were significant and small-to-moderate in size for moralization, perceived control, disgust, and discrimination, but gender differences were weak or non-existent for the health risks and moral character measures. BMI was negatively correlated with moralization, perceived control, disgust, significant and small-to-moderate in size for moralization, perceived control, disgust, and discrimination, but BMI differences were weak or non-existent for the health risks and moral character measures. Similar to past research (e.g., Crandall, 1994), conservatism was positively associated with all of the study measures; the largest associations with conservatism were found for discrimination, moralization, and perceived control. However, because the political orientation measure allowed participants to place themselves outside the standard 7-point liberal-to-conservative scale (e.g., participants could also choose "libertarian" or "not political"), only a subset of the sample (n = 899) reported their level of conservatism. In order to conduct main analyses on the full sample, political orientation was not included as a control variable. Separate analyses that included political orientation are included later in the results section. Age also demonstrated small but significant negative correlations with moralization, perceived control, disgust, discrimination, low association health risks, and association of negative moral traits with obese people, indicating that overall, older people reported less negative attitudes toward obese people. Finally, the dichotomous variables for having an obese family member and having an obese friend were weakly negatively associated with many of the study measures, indicating that having personal relationships with obese people is associated with less moralization and less negative attitudes toward obese people. Given the numerous significant associations found for

Table 2.1

Summary of Pairwise Correlations Between Study Measures and Descriptive Statistics (Study 1A)

Measure	1	2	3	4	5	6	7	8
1. Moralization	-							
2. Perceived control	.60***	-						
3. Disgust	.49***	.44***	-					
4. Discrimination	.60***	.59***	.50***	-				
5. High association health risks	.31***	.35***	.26***	.33***	-			
6. Low association health risks	.20***	.14***	.08*	.18***	.32***	-		
7. Negative moral traits	.23***	.20***	.17***	.21***	.22***	.23***	-	
8. Positive moral traits	-.23***	-.18***	-.18***	-.22***	-.10**	-.11**	-.12***	-
Descriptive statistics								
M	3.37	3.42	2.49	2.69	6.12	4.22	4.12	4.04
SD	1.27	0.87	1.07	1.06	0.64	0.59	0.44	0.46
α	.86	.74	-	.76	.73	.78	.75	.80
Range								
Potential	1 - 7	1 - 5	1 - 5	1 - 5	1 - 7	1 - 7	1 - 7	1 - 7
Actual	1 - 7	1 - 5	1 - 5	1 - 5	2.25 - 7	1 - 7	1 - 6.71	1 - 6.33

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

Table 2.2

Summary of Pairwise Correlations Between Study Measures and Individual Difference Variables (Study 1A)

Measure	1	2	3	4	5	6	7	8
Gender	.17***	.20***	.12***	.22***	.08**	.01	.08**	-.06
Age	-.13***	-.15***	-.09**	-.13***	-.02	-.11***	-.11***	.03
BMI	-.23***	-.20***	-.19***	-.22***	-.18***	-.03	-.05	.09**
Obese family	-.09**	-.08**	-.08*	-.11***	-.07*	-.06*	.02	.06*
Obese friends	-.13***	-.11***	-.13***	-.13***	-.12***	-.04	-.03	.12***
Political Conservatism	.34***	.32***	.12***	.42***	.10**	.13***	.07*	-.09**

Note. Labels for the study measures correspond with the numbered measures in Table 2.1. Gender was coded as 0 = female, 1 = male. Obese family and obese friends variables were coded as 0 = No, 1 = Yes. Data for political conservatism was only available for 899 participants. All other correlations were computed with the full sample.

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

demographic and individual difference variables, subsequent analyses included controls for gender, age, BMI, obese family members and obese friends.

       Regressions. Ordinary Least Squares (OLS) regression analyses were conducted to examine the relationships between moralization and the various study measures after controlling for gender, age, BMI, obese family members and obese friends, as discussed in the previous section. The addition of control variables to the model did not substantively alter any of the observed relationships, but controls did increase the explained variance of the models. First, OLS regressions were conducted with control variables entered into the first model and moralization as a single predictor in the second model. As hypothesized, moralization was positively associated with perceived control ($b = 0.384$, 95% confidence interval [CI] = [.351, .417], $\beta = .565$, $p < .001$), indicating that greater moralization is strongly associated with the belief that obesity is controllable. As predicted, moralization was also positively related to disgust ($b = 0.383$, 95% CI [.337, .428], $\beta = .454$, $p < .001$), such that greater moralization is associated with stronger reported disgust towards obese people. Subsequent analyses confirmed the hypothesis that moralization is associated with the proposed downstream consequences related to endorsement of discrimination against obese persons, beliefs about the consequences of obesity, and evaluations of the moral character of obese persons. Moralization was a strong positive predictor of discrimination, $b = 0.456$, 95% CI [.416, .496], $\beta = .549$, $p < .001$. Moralization demonstrated small-to-moderate size positive associations with high association health risks ($b = 0.134$, 95% CI [.104, .163], $\beta = .265$, $p < .001$), low association health risks ($b = 0.086$, 95% CI [.058, .114], $\beta = .187$, $p < .001$), and ratings of negative moral traits ($b = 0.072$, 95% CI [.052, .093], $\beta = .211$, $p < .001$). As expected, moralization was also negatively associated with ratings of positive moral traits, $b = -0.082$, 95% CI [-.103, -.061], $\beta = -.234$, $p < .001$.

Hierarchical multiple regression analyses were conducted in order to examine the contributions of perceived control and disgust to the various outcome measures, and to see whether moralization would remain a significant predictor when accounting for perceived control and disgust. First, regressions were conducted to examine perceived control and disgust separately. As shown in Table 2.3, when entered in the second block of predictors, the coefficient for perceived control was in the expected direction and significantly predicted disgust, health risk ratings and moral character ratings. When moralization and perceived control were examined simultaneously in the third block of predictors, moralization and perceived control remained significantly associated in the expected direction with disgust, discrimination, high association obesity health risks, and negative moral traits. Moralization remained significantly related to low association obesity health risks and positive moral traits, but perceived control was no longer a significant predictor of these measures. A similar pattern of findings, demonstrated in Table 2.4, were found when disgust was examined as a separate predictor in the second model and then included with moralization in the full model. As expected, disgust significantly positively predicted perceived control, discrimination, health risk ratings, and negative moral traits, and negatively predicted positive moral traits. When moralization was added to the regression, moralization and disgust remained positive significant predictors of perceived control, discrimination, high association health risks and negative moral traits, and were negative predictors of positive moral traits. Greater moralization also predicted higher ratings of low association obesity health risks, though disgust was no longer a significant predictor of this measure in the full model. Overall, as demonstrated in Tables 3 and 4, moralization was significantly associated with perceived control, disgust, and all of the measures hypothesized to relate to moralization, even when adjusting for perceived control or disgust.

Regressions were conducted to examine moralization as a predictor of the outcome measures when perceived control and disgust were both accounted for in the regression model. As shown in Table 2.5, perceived control, disgust, and moralization remained significant predictors of two measures—discrimination and high association obesity health risks—in the full model. Given the diversity of concepts in the discrimination composite measure, the items were also examined individually. Of particular interest due to its straightforward association with employment discrimination was the item taken from Crandall's (1994) Anti-Fat Attitudes measure, which stated, "If I were an employer looking to hire, I might avoid hiring an obese person." In a hierarchical regression analysis adjusted for control variables, the full model that included perceived control, disgust, and moralization revealed that perceived control ($b = 0.141$, 95% CI [.048, .233], $\beta = .093$, $p = .003$), disgust ($b = 0.323$, 95% CI [.255, .391], $\beta = .264$, $p < .001$), and moralization ($b = 0.324$, 95% CI [.260, .389], $\beta = 0.315$, $p < .001$), were all significant positive predictors of agreement with the discrimination item. In other words, greater moralization, disgust, and belief in the controllability of obesity all significantly predicted endorsement of employment-related discrimination against obese people. The same pattern of results was found for the remaining three discrimination items.

Table 2.3
Beta (β) and Change R^2 Values for Perceived control and Moralization as Predictors of Disgust, Discrimination, Health Risk Ratings, and Negative and Positive Moral Traits (Study 1A)

	Disgust		Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.06***		.11***		.06***		.02**		.03***		.02***	
Control variables												
Model 2	.15***		.26***		.09***		.01***		.03***		.02***	
Perceived control		.41***		.54***		.32***		.12***		.19***		-.16***
Model 3	.07***		.08***		.01**		.02***		.02***		.03***	
Perceived control		.23***		.34***		.26***		.03		.10**		-.04
Moralization		.33***		.36***		.12**		.17***		.15***		-.21***
Total R^2	.28		.45		.16		.05		.07		.07	

Note. Control variables included gender, age, BMI, obese family member and obese friend variables.
*$p < .05$ **$p < .01$ ***$p < .001$

Table 2.4
Beta (β) and Change R^2 Values for Disgust and Moralization as Predictors of Perceived control, Discrimination, Health Risk Ratings, and Negative and Positive Moral Traits (Study 1A)

	Perceived control		Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.09***		.11***		.06***		.02**		.02***		.02**	
Control variables												
Model 2	.15***		.19***		.05***		.004*		.02***		.03***	
Disgust		.40***		.45***		.22***		.07*		.16***		-.17***
Model 3	.17***		.13***		.03**		.03***		.02***		.03***	
Disgust		.19***		.27***		.13***		-.02		.08*		-.08*
Moralization		.48***		.43***		.21**		.20***		.17***		-.20***
Total R^2	.41		.44		.13		.05		.07		.07	

Note. Control variables included gender, age, BMI, obese family member and obese friend variables.
*$p < .05$ **$p < .01$ ***$p < .001$

Table 2.5
Beta (β) and Change R^2 Values for Hierarchical Multiple Regressions with Perceived control, Disgust, and Moralization as Predictors of Discrimination, High and Low Association Obesity Health Risk Ratings, and Negative and Positive Moral Traits (Study 1A)

	Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.11***		.06***		.02**		.02***		.02**	
Control variables										
Model 2	.26***		.10***		.02***		.03***		.02***	
Perceived control		.54***		.28***		.13***		.19***		-.16***
Model 3	.07***		.01***		.00		.01**		.01***	
Disgust		.29***		.11***		.02		.10**		-.12***
Model 4	.05***		.01*		.02***		.01**		.02***	
Perceived control		.29***		.24**		.05		.09*		-.03
Disgust		.21***		.09**		-.03		.07		-.08*
Moralization		.29***		.09*		.18***		.13**		-.19***
F(df, df)	130.71 (8, 1107)***		27.49 (8, 1107)***		7.04 (8, 1107)***		10.86 (8, 1107)***		11.14 (8, 1107)***	
Total R^2	.49		.17		.05		.07		.08	
$R^2_{adjusted}$	.48		.16		.04		.07		.07	

Note. Control variables included gender, age, BMI, obese family member and obese friend variables. The F values correspond with Model 4.
*$p < .05$ **$p < .01$ ***$p < .001$

For low association health risks, moralization was still a significant predictor ($b = 0.081$, 95% CI [.045, .116], $\beta = .175$, $p < .001$) after adjusting for all other predictors, whereas perceived control and disgust were nonsignificant. When the same analysis was conducted for the fake health condition ("Nerys Syndrome"), moralization emerged as the only significant predictor ($b = 0.083$, 95% CI [.040, .125], $\beta = .154$, $p < .001$), adjusting for the other predictors in the model. This finding supported the hypothesis that moralization would predict stronger perceptions of the health risks of obesity, to the point that even an unfamiliar disease was more likely to be associated with obesity. Moralization and perceived control, but not disgust, remained significant predictors of negative moral traits in the full model. In contrast, moralization and disgust were significant predictors of positive moral traits, while perceived control became nonsignificant when adjusting for the other predictors.

Political Conservatism. Given the significant correlations between political conservatism and many of the study measures, multiple regression analyses were conducted with conservatism in order to determine whether associations with conservatism could explain the unique variance attributed to moralization in the previous analyses. Conservatism was significantly positively associated with discrimination ($\beta = 0.24$, $p < .001$) in the full model, but moralization ($\beta = 0.25$, $p < .001$), perceived control ($\beta = 0.23$, $p < .001$), and disgust ($\beta = 0.22$, $p < .001$) remained significant predictors as well, suggesting that conservatism does not fully account for the relationship between discrimination and the other predictors. Conservatism was also a weak significant predictor of low association obesity health risks ratings ($\beta = 0.07$, $p < .001$), but its inclusion in the full model did not change the significance or strength of the other predictors. Conservatism was not a significant predictor of high association obesity health risks,

negative moral traits, or positive moral traits (all ps > .50) when adjusting for the other predictors.

Discussion

The results supported the hypothesis that greater moralization of obesity is associated with stronger belief in the controllability of obesity. As expected, moralization was also significantly positively associated with feeling disgust towards obese people. Regression analyses indicated that moralization predicted perceived control when controlling for disgust, and moralization predicted disgust when controlling for perceived control. These findings suggest that perceived control and disgust are, in part, independent components of moralization. This conclusion supports previous research that found that associations of disease with obese people, as well as belief that obesity is controllable, were both important independent predictors of negative attitudes toward obese people (Park, Schaller, & Crandall, 2007).

Notably, moralization predicted endorsement of discrimination, high and low association health risk ratings, and positive and negative moral traits, even when adjusting for perceived control, disgust, and control variables. Moreover, controlling for conservatism did not change the pattern of findings. The results indicated that moralization might reflect more than simply the combination of perceived control, disgust, and conservatism. The next study sought to replicate the findings of perceived control and disgust as significant predictors of moralization, as well as investigate whether moralization still predicted the outcome measures of interest when controlling for disgust and perceived control.

Study 1B: Moral Judgments of Obesity in a College Student Sample

Study 1B was intended to serve as a replication of study 1A and allowed for the examination of key variables in a sample that was more culturally diverse than YourMorals.org samples. The same measures were used across both studies, with slight modifications to some of the control variables from study 1A.

Method

Participants. Participants were 270 undergraduate students from the University of California, Irvine. Fifty-five participants failed the single-item attention check and were excluded from analysis. The final sample consisted of 218 women and 52 men. Their mean age was 21.2 years (age range: 18-42 years) and their mean BMI was 23.7 ($SD = 4.86$). Consistent with the demographics of the undergraduate student population at UCI, the sample was largely Hispanic (36%) and Asian-American (30.4%); the remaining participants identified as Caucasian (13.7%), Black (3.3%), another race (5.9%), or multiracial (10.7%).

Procedure and materials. Participants agreed to participate in a study advertised as a survey of "attitudes toward health issues." Participants earned partial course credit for their participation. After accessing the study link (hosted on Qualtrics) and reading the informed consent form, participants completed the moralization scale and dependent measures from study1A.

The primary measures were identical to those in study1A, and the order of presentation of key measures was also randomized to control for order effects. Personal experiences with obesity questions and demographics were always presented at the end of the survey. The *moralization* scale demonstrated adequate reliability ($\alpha = .78$). The 4-item *perceived control* scale also demonstrated acceptable reliability ($\alpha = .66$). The *discrimination* scale demonstrated lower

reliability in this sample ($\alpha = .57$). However, analyses indicated that the predicted relationships with the composite discrimination score were in the expected direction and highly similar to the findings from study 1A. Thus, for the sake of continuity between the studies, the four items were combined to form an average *discrimination* score. The emotion items (disgust, contempt, compassion) were also identical to study 1A and were analyzed individually. The two-factor health risks measure, comprised of *high association risks* and *low association risks*, yielded acceptable Cronbach's alphas of .80 and .86, respectively. The *negative moral traits* ($\alpha =.68$) and *positive moral traits* ($\alpha =.76$) scales also demonstrated adequate reliability.

Similar to the previous study, study 1B included measures of personal experiences with obesity, including a measure of BMI. However, the two questions about participants' family members and friends with obesity were replaced with items modified from those by Schwartz, Vartanian, Nosek, & Brownell, 2006). Participants responded to two questions coded on a 0-4 scale (response options: none, one, some, many, all): "How many of your relatives are significantly overweight/obese?" and "How many of your friends are significantly overweight/obese?"

Results

Correlations. Initial analyses examined the pairwise correlations between the major study measures (Table 2.6). Although many of the correlations were smaller than those in study 1A, the main hypotheses were supported. Moralization was significantly correlated with all main measures; the strongest correlation was found for perceived control ($r = .45, p < .001$), whereas the weakest association was with high association obesity health risks ($r = .13, p = .033$). Disgust and discrimination were also moderately correlated with moralization. As in study 1A, perceived control and disgust were moderately correlated with each other, and both variables correlated

significantly with all other measures, except for a non-significant correlation between disgust and low association health risks. Overall, the correlations were similar to those in study 1A, despite the smaller sample size and different sample characteristics of study 1B.

The correlations between potential control variables and the main study measures are shown in Table 2.7. Compared to study 1A, there were fewer significant correlations with the control variables. There were small positive associations between gender and the measures of moralization ($r = .13$, $p = .037$) and discrimination ($r = .20$, $p = .001$), such that men scored higher than women on these measures. Unlike study 1A, age was not correlated with any of the measures, and BMI was only significantly correlated with discrimination and positive moral traits. Similarly, conservatism was only significantly correlated with moralization ($r = .15$, $p = .030$) and discrimination ($r = .24$, $p = .001$). Overall, the control variables were less significant for this sample, but were generally in the expected direction. Given that some significant associations were found for demographic and individual difference variables, and for the sake of comparison across the studies, subsequent analyses included controls for gender, BMI, obese family members and obese friends.

Regressions. Replicating the procedures in study 1A, regression analyses were performed to examine the relationships between moralization and the various study measures after controlling for demographic characteristics and other individual differences. First, OLS regressions were conducted with control variables entered into the first model and moralization as a single predictor in the second model. As expected, and in line with the study 1A results, moralization was a significant predictor of all main study measures. Mirroring the correlations reported in Table 2.6, the strongest relationships with moralization were found for perceived control ($b = 0.314$, 95% CI [.232, .395], $\beta = .429$), disgust ($b = 0.425$, 95% CI [.309, .541], $\beta =$

.413), and discrimination ($b = 0.217$, 95% CI [.132, .302], $\beta = .287$), all ps $< .001$. Weaker

associations with moralization were found for low association health risks ($b = 0.144$, 95% CI

[.029, .258], $\beta = .156$), negative moral traits ($b = 0.106$, 95% CI [.050, .161], $\beta = .231$), and

positive moral traits ($b = -0.071$, 95% CI [-.133, -.008], $\beta = -.135$), all ps $< .03$. The association

between moralization and ratings of high association health risks was not significant, $b = 0.085$,

95% CI [-.012, .183], $\beta = .108$. Overall, compared to the results of the previous study,

moralization was a weaker predictor, though still significant and in the expected direction.

Regressions were then conducted to examine perceived control and disgust separately. As

shown in Table 2.8, when entered in the second block of predictors, the coefficient for perceived

control was in the expected direction and significantly predicted disgust, discrimination, health

risk ratings and moral character ratings. Moralization and perceived control were then examined

simultaneously in the third block of predictors. Moralization remained a significant positive

predictor of disgust, whereas perceived control was no longer significant, which differed from

the study 1A finding that perceived control still significantly predicted disgust when moralization

was included in the regression. Similar to study 1A, moralization and perceived control remained

significantly positively associated with discrimination and negative moral traits. However,

contrary to study 1A, perceived control remained significantly related to both high and low

association obesity health risks and moral strength ratings, but moralization was no longer a

significant predictor of those measures.

Table 2.6
Summary of Pairwise Correlations Between Study Measures and Descriptive Statistics (Study 1B)

Measure	1	2	3	4	5	6	7	8
1. Moralization	-							
2. Perceived control	.45***	-						
3. Disgust	.41***	.27***	-					
4. Discrimination	.33***	.29***	.38***	-				
5. High association health risks	.13*	.32***	.12*	.12	-			
6. Low association health risks	.15*	.25***	.03	.09	.47***	-		
7. Negative moral traits	.21**	.25***	.27***	.09	.13*	.14*	-	
8. Positive moral traits	-.18**	-.19**	-.24***	-.20**	-.08	-.02	-.03	-
Descriptive statistics								
M	3.76	3.48	1.88	2.32	6.24	4.73	4.22	4.08
SD	0.95	0.70	0.98	0.72	0.75	0.87	0.43	0.49
α	.78	.66	-	.57	.80	.86	.68	.75
Range								
Potential	1 - 7	1 - 5	1 - 5	1 - 5	1 - 7	1 - 7	1 - 7	1 - 7
Actual	1.38 - 5.75	1 - 5	1 - 5	1 - 4.75	1.75 - 7	2.33 - 7	2.29 - 7	1.5 - 6.5

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

Table 2.7
Summary of pairwise correlations between key measures and control variables (Study 1B)

Measure	1	2	3	4	5	6	7	8
Gender	.13*	.10	.04	.20**	.03	.02	-.01	-.06
Age	-.06	.00	.07	.06	.08	-.02	.03	-.04
BMI	-.07	.00	-.07	-.17**	.03	.05	.03	.18**
Obese family	-.03	-.03	-.05	-.18**	-.02	.03	.04	.11
Obese friends	-.13*	-.04	-.06	-.15*	-.07	.02	.06	.11
Political Conservatism	.15*	.10	.02	.24**	.05	.07	-.07	.08
Race- White	.00	.11	.14*	.06	.13*	.08	.02	-.04
Race- Hispanic	-.07	.10	-.13*	-.20**	-.10	-.01	.07	.14*
Race- Asian	-.06	-.09	-.01	.14*	-.07	-.05	-.08	-.03

Note. Labels for the study measures correspond with the numbered measures in Table 2.6. Gender was coded as 0 = female, 1 = male. Data for political conservatism were only available for 201 participants. All other correlations were computed with the full sample.

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

Table 2.8
Beta (β) and Change R² Values for Perceived Control and Moralization as Predictors of Disgust, Discrimination, Health Risk Ratings, and Moral Traits (Study 1B)

	Disgust		Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.04		.12***		.04		.01		.01		.07*	
Control variables												
Model 2	.06***		.06***		.08		.06***		.06***		.02**	
Perceived control		.25***		.26***		.30***		.25***		.26***		-.16**
Model 3	.11***		.04**		.00		.00		.02*		.01	
Perceived control		.09		.17**		.30***		.23**		.20**		-.13
Moralization		.37***		.22**		-.02		.06		.15*		-.08
Total R^2	.21		.22		.12		.07		.09		.10	

Note. All models included the following control variables: gender, BMI, dummy variables for Hispanic, Asian, and other-race participants (omitted group was White), obese family member and obese friend variables.
*p < .05 **p < .01 ***p < .001

Table 2.9
Beta (β) and Change R² Values for Disgust and Moralization as Predictors of Perceived control, Discrimination, Health Risk Ratings, and Moral Traits (Study 1B)

	Perceived control		Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.05*		.12***		.04		.01		.01		.07*	
Control variables												
Model 2	.06***		.11***		.01		.00		.09***		.04**	
Disgust		.25***		.34***		.10		.02		.30***		-.20**
Model 3	.12***		.02**		.01		.02*		.01		.00	
Disgust		.09		.27***		.07		-.05		.25***		-.18**
Moralization		.39***		.17**		.08		.18*		.13		-.06
Total R^2	.23		.25		.05		.03		.11		.10	

Note. All models included the following control variables: gender, BMI, dummy variables for Hispanic, Asian, and other-race participants (omitted group was White), obese family member and obese friend variables.
*p < .05 **p < .01 ***p < .001

Table 2.10

Beta (β) and Change R² Values for Hierarchical Multiple Regressions with Disgust, Perceived control, and Moralization as Predictors of Discrimination, High and Low Association Obesity Health Risk Ratings, and Negative and Positive Moral Traits (Study 1B)

	Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.12***		.04		.01		.01		.07*	
Control variables										
Model 2	.06***		.08***		.06***		.06***		.02**	
Perceived control		.26***		.30***		.25***		.26***		-.16**
Model 3	.08***		.00		.00		.06***		.03**	
Disgust		.30**		.03		-.04		.25***		-.18**
Model 4	.01		.00		.01		.00		.00	
Perceived control		.14*		.30***		.23**		.18**		-.12
Disgust		.26***		.04		-.07		.23***		-.17**
Moralization		.12		-.04		.09		.06		-.03
F(df, df)	9.81 (10, 258)***		3.50 (10, 258)***		2.11 (10, 258)*		3.93 (10, 258)***		3.44 (10, 258)***	
Total R^2	.28		.12		.08		.13		.12	
$R^2_{adjusted}$	.25		.09		.04		.10		.08	

Note. All models included the following control variables: gender, BMI, dummy variables for Hispanic, Asian, and other-race participants (omitted group was White), obese family member and obese friend variables. The F values correspond to Model 4.
*$p < .05$ **$p < .01$ ***$p < .001$

Regressions were then conducted to examine perceived control and disgust separately. As shown in Table 2.8, when entered in the second block of predictors, the coefficient for perceived control was in the expected direction and significantly predicted disgust, discrimination, health risk ratings and moral character ratings. Moralization and perceived control were then examined simultaneously in the third block of predictors. Moralization remained a significant positive predictor of disgust, whereas perceived control was no longer significant, which differed from the study 1A finding that perceived control still significantly predicted disgust when moralization was included in the regression. Similar to study 1A, moralization and perceived control remained significantly positively associated with discrimination and negative moral traits. However, contrary to study 1A, perceived control remained significantly related to both high and low association obesity health risks and moral strength ratings, but moralization was no longer a significant predictor of those measures.

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Similar patterns of findings were found when disgust was examined as a separate predictor in the second model and then included with moralization in the full model (see Table 2.9). When entered into the second block of predictors, the coefficient for disgust was in the expected direction and significantly predicted perceived control, discrimination and moral character ratings. Contrary to study 1A, however, disgust was not related to the health risk measures. When moralization was added to the model, moralization remained a significant positive predictor of perceived control, whereas disgust was no longer significant. For moral strength ratings, disgust was the only significant predictor in the full model and demonstrated the expected negative relationship between disgust and ratings of positive moral traits. Interestingly, and in contrast with study 1A, moralization and disgust did not significantly predict high association obesity health risks, and moralization was the only significant predictor of low association health risks. When these health risk-related findings are compared to the regressions with perceived control, it is apparent that, at least for this sample, belief that obesity is controllable was the most important predictor of beliefs about obesity-related health risks. In sum, several findings differed from study 1A, in that moralization became nonsignificant when perceived control or disgust were included as predictors. However, none of the results contradicted the main hypothesis that moralization is significantly related to perceived control and disgust.

Additional regression analyses were conducted to determine if moralization would remain a significant predictor when accounting for perceived control and disgust. As shown in Table 2.10, which presents the results of the multiple regression analyses, moralization was no longer a significant predictor of any measures when perceived control and disgust were included in the model. Disgust emerged as the only significant predictor of positive moral traits, adjusting

for the other predictors in the model. Perceived control and disgust remained significant predictors of discrimination and negative moral traits. Perceived control, but not disgust or moralization, significantly predicted high and low association health risks ratings. When the same analysis was conducted for the fake health condition ("Nerys Syndrome), perceived control emerged as the only significant predictor when adjusting for the other predictors in the model, b = 0.373, 95% CI [.163, .584], β = .24, p = .001.

Finally, study 1B afforded the opportunity to investigate whether people from different cultural backgrounds report different levels of moralization or other related attitudes toward obesity. T-tests were conducted to evaluate whether the means for the primary study measures differed between White (n = 37), Latino (n = 98), and Asian-American (n = 82) participants, which were the three largest racial groups in the study. One-way Analysis of Variance (ANOVA) tests indicated that the groups differed significantly on disgust [$F(2, 214)$ = 3.56, p = .030] and discrimination [$F(2, 214)$ = 6.36, p = .002]. Post-hoc pairwise comparisons (Bonferroni-corrected) revealed that White participants reported greater disgust (M = 2.22, SD = 1.13) than Hispanics (M = 1.71, SD = .90), 95% CI [.050, .960], p = .025. Asian-American participants reported greater endorsement of discrimination (M = 2.47, SD = 0.66) than Latinos (M = 2.13, SD = 0.68), 95% CI [.097, .588], p = .003. The groups did not differ on moralization or any other main study measures.

Discussion

Although the main hypotheses were supported, such that moralization was significantly related to control attributions and disgust, a number of differences emerged between study 1A and study 1B. First, moralization was a significant predictor on its own, but was no longer significant when perceived control and disgust were included. The results aligned with the

original hypothesis that moralization would be explained largely by perceived control and disgust, but stood in contrast to study 1A, which found that moralization was a significant predictor over and above perceived control and disgust. Belief in the controllability of obesity was the strongest predictor of high and low association health risks ratings, whereas disgust was the strongest predictor of discrimination, negative moral traits, and positive moral traits. These findings differed from study 1A, in which perceived control was not associated with low association health risks, and disgust was a weaker predictor of discrimination and positive moral traits (and not associated with negative moral traits).

There are a number of possible explanations for why many of study 1B's results differed from those of study 1A. One reason could be that many of the composite measures had lower reliability, which may have weakened some of the associations and made it more difficult to detect small effects. The sample characteristics also differed substantially from those of study 1A, which may have affected the reliability of the measures, or posed particular challenges due to cultural differences in attitudes toward obese persons. Compared to study 1A, the present sample was composed of college students, and was younger in age, predominantly female, and more racially diverse (< 15% identified as White). Some studies have found cultural differences in obesity attitudes. Crandall and colleagues (2001) found that anti-fat prejudice was stronger in individualistic cultures such as the U.S., compared to attitudes in places such as India and Venezuela. Furthermore, Crandall and Martinez (1996) found that Mexican students reported less negative attitudes toward overweight people than U.S. students, and in Mexico, attributions about the controllability of obesity were less important for predicting negative attitudes. Although the present sample was based in the U.S., non-White participants may have had different cultural experiences and beliefs that influenced their attitudes and moral judgments of

obesity. Of course, there are also regional differences between the YourMorals.org and college student samples that may influence obesity attitudes, since the college samples in these studies resided in southern California. Future research may benefit from exploring regional variation in obesity attitudes and whether lower levels of obesity in local populations predict greater condemnation of obesity.

Taken together, the primary hypotheses were supported in this sample. However, belief that obesity is controllable and disgust reactions more fully accounted for the associations between moralization and the outcome measures compared to study 1A. Perceived control also emerged as the strongest predictor of moralization and health risk ratings. Given its strong association with moralization in both studies, as well as its central role in the obesity attitudes literature, studies 2A and 2B were conducted to further explore the relationship between belief in the controllability of obesity and moral judgments of obesity.

Studies 2A and 2B: A Test of the Link Between Moralization of Obesity and Perceived Control in an Online Sample (2A) and College Sample (2B)

Following Studies 1A and 1B, a logical next step was to experimentally manipulate one of the proposed components of moralization (i.e., perceived control or disgust) to determine whether they are causally linked to moral judgments about obesity. Given the strong emphasis on perceived control in the obesity attitudes literature, the present studies attempted to manipulate participants' beliefs about the controllability of obesity. In other words, studies 2A and 2B were designed to test the hypothesis that moralization of obesity is influenced significantly by the belief that obesity is controllable. It was expected that participants who were led to believe that obesity is due more to factors outside a person's control would report less moralized views of obesity, and consequently weaker ratings of disgust, discrimination, health risks of obesity, and

associations of obese people with negative moral traits, compared to participants who were led to believe that obesity is attributable to personal responsibility. Thus, belief in the controllability of obesity was hypothesized to moderate the relationship between moralization and the outcome measures of discrimination, health risk ratings, and moral character evaluations. Similar to the first set of studies, Studies 2A and 2B were conducted simultaneously, with study 2B intended to serve as a replication of study 2A.

Study 2A

Method

  Participants. Participants were 883 visitors to YourMorals.org. Fifty participants failed the attention check and were excluded from analysis. The final sample consisted of 539 men, 342 women, and 2 participants who did not report their gender. Their mean age was 33.9 years (age range: 18-83 years) and their mean body mass index (BMI) was 25.8 ($SD = 6.12$). Of the 859 participants who identified the country in which they live, the majority of the sample (91%) identified as living in Western countries (U.S.: 72.9%). Among the 336 participants who answered the race/ethnicity questions, the majority identified as Caucasian (77.7%).

  Design and procedure. As in study 1A, visitors to YourMorals.org (YM) volunteered for a study advertised as a survey of "attitudes toward obesity." Visitors who had already taken study 1A were automatically excluded from taking the second study. Participants did not receive monetary compensation for their time.

  After accessing the study link and reading the informed consent form, participants were randomly assigned to read one of two introductory passages (created for the purposes of this study) that purportedly explained the rationale of the survey by giving facts about obesity and discussing its causes (see Appendix A for full stimulus materials). In the *obesity uncontrollable*

condition ($N = 444$), the passage explained to participants that obesity has little to do with self-control, and provided ostensibly scientific evidence to support the claim that self-control is not an important cause of obesity. The key manipulation for this condition stated:

> The majority of obese people put great effort into losing weight but are unsuccessful; and even those who lose weight in the short term usually gain back the weight within 2 years (Mann, 2015). Research shows that self-control (i.e., willpower) is not correlated with weight; even in studies with children, those who have high self-control are just as likely to be overweight as adults (Ridder, 2014). In sum, because recent research suggests that obesity is largely uncontrollable, it's important to understand people's attitudes and beliefs toward this growing problem.

In the *obesity controllable* condition ($N = 439$), the study introduction was identical in basic form and length but conveyed to participants that obesity is strongly related to self-control. The key manipulation for the obesity controllable condition stated:

> Although the majority of obese people report being able to lose weight in the short term, most gain back the weight within 2 years (Mann, 2015), which means they fail to maintain their weight loss goals over time. Research shows that self-control (i.e., willpower) is highly correlated with weight; even in studies with children, those who have high self-control are far less likely to be overweight as adults (Ridder, 2014). In sum, because recent research suggests that obesity is largely controllable, it's important to understand people's attitudes and beliefs toward this growing problem.

After reading one of the passages, participants completed the various measures from the first studies. Finally, participants were debriefed and thanked for their time.

Measures. All of the measures were identical to those used in the first studies (see Table B3 in Appendix B for a summary of the psychometric properties of measures in study 2A). The measures were presented in the same order as in study 1A, which meant that participants first completed measures of moralization, emotions, perceived control, and discrimination on the first page of online survey questions, followed by the health, moral traits, and personal experiences with obesity questions. The *moralization* scale demonstrated adequate reliability ($\alpha = .86$). The 4-item *perceived control* scale also demonstrated acceptable reliability ($\alpha = .76$). The mean *perceived control* score also served as a manipulation check. Participants in the obesity controllable condition were expected to score significantly higher on perceived control than participants in the obesity uncontrollable condition.

Similar to the YM sample in study 1A, the discrimination scale had adequate reliability ($\alpha = .74$); a *discrimination* score was computed for each participant by averaging the responses across the four items. The three emotion questions (disgust, contempt, compassion) were identical to the previous studies and were analyzed individually. The *high association health risks* and *low association health risks* measures yielded acceptable Cronbach's alphas of .79 and .75, respectively. The negative moral traits ($\alpha = .76$) and positive moral traits ($\alpha = .80$) scales also demonstrated adequate reliability. As in study 1B, potential moderators included questions about having family and friends with obesity, as well as participants' height and weight for calculation of participants' BMI.

Results and Discussion

First, a manipulation check was performed using the composite measure of perceived control as the dependent variable in order to determine whether the manipulation indeed weakened belief in the controllability of obesity for the *obesity uncontrollable* group. An

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independent samples *t* test revealed that, as expected, those in the *obesity uncontrollable* condition ($M = 3.38$, $SD = 0.86$) reported slightly weaker belief in the controllability of obesity than those in the *obesity controllable* condition ($M = 3.57$, $SD = 0.85$), $t(881) = 3.46$, $p = .001$, Cohen's $d = 0.23$. However, when mean perceived control in the experimental conditions is compared to perceived control in study 1A, which can be thought of as equivalent to a control (i.e., no manipulation) group, a different interpretation emerges. In the obesity uncontrollable condition, perceived control ($M = 3.38$, $SD = 0.86$) was virtually identical to the mean in study 1A ($M = 3.42$, $SD = 0.87$), $t(1598) = -0.83$, $p =$ n.s. There was a significant difference, however, when comparing perceived control in the obesity controllable condition to study 1A, $t(1593) = 3.13$, $p = .002$, Cohen's $d = 0.16$. These comparisons indicate that the manipulation did not decrease control attributions relative to a control condition, but the *obesity controllable* condition did slightly increase control attributions relative to the control group.

An independent samples *t* test showed that mean moralization in the *obesity uncontrollable* condition ($M = 3.33$, $SD = 1.24$) did not differ significantly from mean moralization in the *obesity controllable* condition ($M = 3.41$, $SD = 1.28$), $t(881) = 0.94$, $p = .346$. Both of the experimental conditions did not differ from study 1A in moralization ($M_{Study\ 1A} = 3.37$). An OLS regression analysis adjusting for the same control variables as the previous studies (e.g., gender, BMI) demonstrated the same result: the experimental condition did not significantly predict moralization, $b_{condition} = -.07$, $p = .424$. Additional analyses confirmed that experimental condition did not interact significantly with gender or BMI. There was also no significant association between experimental condition and disgust. The only other significant difference between experimental conditions was that participants in the obesity controllable condition scored slightly higher on the high association obesity health risks measure than

participants in the obesity uncontrollable condition (see Table B4 in Appendix B for a comparison of means between the conditions). Similarly, the means of all the study measures were highly similar to those in study 1A and the only other significant difference was that participants in the obesity controllable condition scored slightly higher on the low association obesity health risks measure than participants in study 1A (see Table B5 in Appendix B for a comparison between the conditions and study 1A).

The results indicate that the manipulation was simply not strong enough to substantially influence people's beliefs about the causes of obesity. This conclusion is further supported by a sensitivity analysis that demonstrated that the sample size of 883 is sufficient at .05 error probability and 80% power to detect an effect size as small as 0.18 standard deviations. Moralization may have decreased significantly had the manipulation produced a more dramatic decrease in perceived control. Although the manipulation did slightly increase perceived control in the controllable condition, the effect was likely too weak to influence other measures. The alternative explanation is that belief in the controllability of obesity is not causally linked to moralization of obesity, and thus even a highly successful manipulation of perceived control would not influence moral judgments of obesity. The latter explanation seems less likely given the preponderance of evidence linking perceived control to negative attitudes toward obesity (e.g., Crandall, 1994), as well as evidence that moral judgments are often linked to how controllable an undesirable trait or behavior is perceived to be (Clark et al., 2015).

Table 2.11

Multiple Regression Analyses Predicting Discrimination, Health Risk Ratings, and Negative and Positive Moral Traits (Study 2A)

	Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.11***		.04***		.04***		.05***		.03***	
Control variables										
Model 2	.22***		.11***		.03***		.06***		.04***	
Perceived control		.48***		.35***		.19***		.25***		-.21***
Model 3	.09***		.01*		.001		.03***		.02**	
Disgust		.34***		.08*		.04		.20***		-.17***
Model 4	.05***		.004*		.02***		.02***		.01*	
Perceived control		.22***		.27***		.09*		.09*		-.09*
Disgust		.23***		.05		-.03		.12**		-.12**
Moralization		.30***		.09*		.19***		.19***		-.13**
F(df, df)	80.41 (9, 827)***		17.79 (9, 827)***		9.14 (9, 827)***		17.18 (9, 827)***		10.59 (9, 827)***	
Total R^2	.47		.16		.09		.16		.10	
$R^2_{adjusted}$	.46		.15		.08		.15		.09	

Note. Control variables included experimental condition, gender, age, BMI, obese family member and obese friend variables.

*$p < .05$ **$p < .01$ ***$p < .001$

Since the manipulation did not have the intended effect, Study 2A can also be treated as a replication of Study 1A. OLS regression analyses revealed highly similar findings to those from study 1A. Moralization was a significant predictor of perceived control, disgust, and all the outcome measures, adjusting for control variables, and the strength and direction of the moralization coefficients were highly comparable to those for study 1A. As shown in Table 2.11, moralization remained a significant predictor of discrimination, high and low association obesity health risks, and both negative and positive moral traits, when adjusting for perceived control, disgust, and control variables. Again, the results suggested that in this type of sample, greater moralization predicted greater endorsement of discrimination, higher perceived risks of health problems for obese people, and negative moral character ratings, even when adjusting for perceived control and disgust.

Study 2B

Method

Participants. Participants were 241 undergraduate students from the University of California, Irvine. Forty-four participants failed the single-item attention check and were excluded from analysis. The final sample consisted of 178 women and 63 men. Their mean age was 21 years (age range: 18-35 years) and their mean BMI was 23.3 ($SD = 4.92$). The sample was largely Hispanic (34.9%), Asian-American (32.8%), and Caucasian (14.9%); the remaining 17.4% identified as another race or multiracial.

Design and procedure. Participants volunteered to participate in a study advertised as a survey of "perceptions of current health issues." Participants earned partial course credit for their participation. Students who participated in study 1B were not allowed to participate in the experiment.

After accessing the study link (hosted on Qualtrics) and reading the informed consent form, participants were randomly assigned to the *obesity uncontrollable* ($N = 120$) or the *obesity controllable* ($N = 121$) condition in which they read one of the two introductory statements, identical to those used in study 2A. After reading one of the passages, participants completed the moralization scale and all other measures from study 2A.

Materials. The measures were identical to those used in study 2A and the order of presentation was randomized (see Table B6 in Appendix B for a summary of the psychometric properties of measures in study 2B). The *moralization* scale demonstrated good reliability ($\alpha = .81$). The 4-item *perceived control* scale demonstrated acceptable reliability ($\alpha = .63$). As in study 2A, the mean *perceived control* score also served as a manipulation check. Similar to the student sample in study 1B, the discrimination scale had relatively poor reliability ($\alpha = .58$).

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However, analyses indicated that the predicted relationships with the composite discrimination score were in the expected direction and similar to the previous studies' findings. For the sake of continuity between the studies, the four items were combined to form an average *discrimination* score. The three emotion questions (disgust, contempt, compassion) were identical to the previous studies and were analyzed individually. The *high association risks* and *low association risks* measures yielded acceptable Cronbach's alphas of .84 and .86, respectively. The negative moral traits (α =.63) and positive moral traits (α =.71) scales also demonstrated adequate reliability. As in studies 1B and 2A, participants were asked two questions about how many of their family members and friends were obese, and finally were asked to report their own height and weight for calculation of their BMI.

Results and Discussion

Identical to the procedures in study 2A, a manipulation check was performed using the composite measure of perceived control as the dependent variable in order to determine whether the manipulation weakened belief in the controllability of obesity for the *obesity uncontrollable* group. An independent samples *t* test demonstrated that those in the *obesity uncontrollable* condition (M = 3.42, SD = 0.66) reported slightly weaker belief in the controllability of obesity than those in the *obesity controllable* condition (M = 3.63, SD = 0.65), $t(239)$ = 2.53, p = .012, Cohen's d = 0.33. However, similar to study 2A, the results are best interpreted by comparing the means in the experimental conditions to the mean perceived control in study 1B, which serves as an appropriate control group for this sample. In the obesity uncontrollable condition, mean perceived control (M = 3.42, SD = 0.66) was nearly identical to the mean for study 1B (M = 3.48, SD = 0.70), $t(388)$ = -0.81, p = n.s. There was a significant difference, however, when comparing mean perceived control in the *obesity controllable* condition to the mean for study 1B, $t(389)$ =

2.06, $p = .040$, Cohen's $d = 0.21$. Similar to the results of study 2A, these comparisons indicate

that the manipulation did not decrease control attributions relative to the control group, but the

obesity controllable condition did slightly increase control attributions relative to the control

group.

As a replication of study 2A, it was hypothesized that experimentally manipulating belief

in the controllability of obesity would influence moralization, such that lowering participants'

perceived control would result in less moralization. However, the manipulation was likely not

effective enough to allow for a true test of this hypothesis. An independent samples t test

confirmed that mean moralization scores in the *obesity uncontrollable* condition ($M = 3.59$, $SD =$

1.24) did not differ significantly from mean moralization in the *obesity controllable* condition (M

$= 3.75$, $SD = 1.01$), $t(239) = 1.26$, $p = .211$. Mean moralization in the experimental conditions did

not differ significantly from mean moralization in study 1B. An OLS regression analysis

adjusting for the same control variables as the previous studies (e.g., gender, BMI) produced a

similar result: the experimental condition did not significantly predict moralization, $b_{condition} = -$

.08, $p = .218$. Similar to the study 2A null results, the experimental condition had no effect on

moral judgments of obesity, which contradicted the study's main hypothesis. Additional analyses

confirmed that experimental condition did not interact significantly with gender or BMI. There

were also no significant associations between the experimental conditions and disgust or the

other study measures (see Table B7 in Appendix B for a comparison of means between the

conditions). The means of all the study measures were highly similar to those in the first student

sample, suggesting that neither experimental condition resulted in significant attitude change

relative to participants in study 1B (see Table B8 in Appendix B for a comparison between the

conditions and study 1B). Finally, the results of multiple regression analyses with moralization,

perceived control, and disgust as predictors of the outcome measures were comparable to those in study 1A, though the perceptions of negative and positive moral traits appeared to differ somewhat from the pattern of results in study 1A (see Table B9 in Appendix B for summary of regression analyses).

The results of the manipulation were highly comparable to those in study 2A, despite the numerous demographic differences between the samples. The manipulation did not succeed in decreasing control attributions and had no effect on any other study measures. The *obesity controllable* condition did increase control attributions slightly, but this effect did not influence moralization or any other variables. Because the manipulation was unsuccessful, it remains unknown whether an experimental manipulation that significantly decreases control attributions would result in less moralization of obesity.

CHAPTER 3

General Discussion

The present research revealed that people who report stronger moral judgments of obesity are more likely than those with less moralized attitudes to believe that obesity is a function of self-control, and more likely to report stronger disgust reactions toward obese people. Moralization was also associated with stronger endorsement of discrimination against obese persons, greater association of health risks with obesity, and more negative perceptions of the moral character of obese people. Overall, these studies suggest that moralized attitudes toward obesity may have negative real-world consequences by increasing prejudice and discrimination toward obese people.

Although the findings were largely consistent across all samples and studies, some differences emerged between the YourMorals.org (YM) and college student samples. In both YM samples, moralization remained a significant predictor of discrimination, health risk perceptions, and moral character ratings, above and beyond the effects of perceived control and disgust. In the student samples, moralization did not predict discrimination (Study 1B), health risk perceptions (Studies 1B and 2B), or moral character ratings (Studies 1B and 2B) when adjusting for perceived control and disgust. Moralization remained a significant predictor of discrimination only in study 2B, when adjusting for perceived control and disgust. The fact that moralization was largely nonsignificant when controlling for perceived control and disgust is not necessarily surprising given the amount of literature suggesting these factors cause or greatly amplify moral judgments. The size of the moralization coefficients suggest that this difference between samples was not merely due to the smaller sizes of the student samples. It may be that the student sample, which was more culturally diverse, on average had different perceptions of

the survey questions that led them to respond differently overall. It may also be that cultural differences influence the hypothesized links between control attributions, disgust, and moral judgment. Some research suggests that in less Westernized cultures, attributions about the controllability of obesity are less important for predicting negative attitudes (Crandall & Martinez, 1996). Indeed, the correlations between perceived control and moralization were smaller in the student samples (Study 1B: $r(270) = .45$; Study 2B: $r(241) = .43$) compared to the YM samples (Study 1A: $r(1156) = .60$; Study 2A: $r(883) = .57$), though mean moralization was higher overall in the student samples than the YM samples. These differences may indicate that control attributions, though still significant, are less predictive of negative moral judgments among non-White participants. Studies on the relation between disgust and obesity attitudes have likewise been conducted on mostly White participants in Western cultures, and thus little is known about the extent to which people with different cultural views have disgust reactions to obesity and whether disgust is more or less predictive of negative attitudes toward obese persons than control attributions. Ultimately, the differences between the samples raise important questions that should be investigated in future studies, but are beyond the scope of the present research.

In studies 2A and 2B, it was hypothesized that experimentally decreasing participants' control attributions would lead participants' to report less moralized attitudes toward obesity. When compared to the means for perceived control in the studies with no experimental manipulation, the manipulations did not succeed in reducing perceived control of obesity, though the *obesity controllable* condition produced small increases in perceived control. No significant changes in moralization were observed in either condition or study, nor did the manipulation significantly affect any of the other outcome measures. Although these null results could be

interpreted as evidence that there is no causal link between control attributions and moralized attitudes, this conclusion would be premature. Though significant increases in perceived control occurred for those in the *obesity controllable* condition, the effect was weak, and the *obesity uncontrollable* manipulation did not succeed in decreasing perceived control. The manipulation was likely too weak to meaningfully affect moral judgments of obesity, and thus did not provide a sufficient test of the hypothesized link between control attributions and moralized attitudes toward obesity. It is worth noting that some studies have failed to decrease participants' control attributions for obesity (Pearl & Lebowitz, 2014; Teachman et al., 2003). Studies have also noted that negative attitudes toward obese people, both implicit (Teachman et al., 2003), and explicit (Flint et al., 2013; Harris et al., 1991; Pearl & Lebowitz, 2014), are particularly difficult to change. The present findings similarly indicate that it is difficult to disabuse people of the view that obesity is caused by internal or controllable factors.

Although the manipulation did not work as intended, the studies provided valuable correlational evidence of links between control attributions, disgust, and moralization of obesity. Across the four studies, belief in the controllability of obesity and disgust were moderately to strongly positively associated with moral attitudes toward obesity. In the moral psychology literature, studies show that perceived control and disgust often motivate and/or amplify moral judgments of others (Alicke, 2000; Schnall et al., 2008). Research on antiobesity attitudes similarly finds that control attributions and disgust predict negative attitudes toward obese persons (Crandall, 1994; Park et al., 2007; Vartanian, 2010). The present research coheres with these literatures and suggests that moral judgments of obesity are largely a function of control attributions and disgust. Rather than moral judgments being explained solely by control attributions, or solely by disgust, the present research suggests that both are important

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components of moralization. Consistent with prior literature (Park et al., 2007), perceived control and disgust appeared to be independently related to moral judgments of obesity, which suggests that the relations between moralization, perceived control and disgust may be complicated and multidirectional. However, the current studies cannot speak to the direction of the relationships between moral judgments of obesity, control attributions, and disgust. When considering how the present research can guide future inquiry into these relationships, it is prudent to consider the moral coherence processes that may be at work. Moral coherence, which describes a process of reasoning in which people are motivated to align their moral judgments with their worldview, can be bidirectional (Clark et al., 2015). For some people, negative moral judgments about obesity may flow primarily from the belief that obese people are in control of their weight and deserving of blame for being obese. This pattern of judgment represents the normative process of reasoning in which people arrive at moral judgments after assessing a person's causal role in a negative outcome (Shaver, 1985; Weiner, 1995). However, it is plausible that moral judgments about obesity can arise through other processes. For example, initial disgust may lead a perceiver to make a negative moral evaluation of the disgust-eliciting person, which can then inspire the perceiver to find other reasons, including factual beliefs that validate the negative moral judgment. In this scenario, a disgust reaction to an obese person leads to a negative moral evaluation, which in turn leads the perceiver to strengthen their belief that obesity is controllable. There may be individual differences that could not be detected in the current studies that influence the degree to which control attributions or disgust lead to moral judgments for certain people. Given the complexity of these relationships, and the fact that the experimental manipulation in the present research was unsuccessful, it is not possible to disentangle the causes and exact pathways among the relationships between moralization, control attributions, and

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disgust. Future experiments that utilize successful manipulations of perceived control, disgust, or even moralization itself, will help to illuminate the process of moralization in the context of obesity, and perhaps the phenomenon of moralization more broadly.

Limitations and Future Directions

To build on the present research, experiments should target control attributions and disgust to better understand the causal links between these constructs and moral judgments about obesity. In previous studies, manipulations aimed at decreasing control attributions yielded inconsistent results (e.g., Pearl & Lebowitz, 2014; Teachman et al., 2003). Compared to Crandall's (1994) more intensive essay manipulation, which gave participants a wealth of information emphasizing that obesity is uncontrollable, the manipulation in the current studies may have been too subtle to influence control attributions. However, the failure of other studies, as well as the current research, suggests that it is not easy to disabuse people of the sense that obese people are generally to blame for their weight. In the U.S., people are bombarded by advertisements for diet and exercise programs, examples in the media and popular television shows of people losing weight, as well as their personal attempts at weight loss, all of which send the message that obesity is controllable. Experimental studies indicate that exposure to targets who achieved substantial weight loss has the effect of increasing control attributions for obesity (Geier et al., 2003; Latner et al., 2012). Given the degree to which control attributions are reinforced in everyday life, future experiments may need to devise more persuasive or even longer-term manipulations to successfully reduce control attributions and thereby determine whether such a reduction would lead to less moralization of obesity.

Future experiments should also determine the relative contribution of disgust to moral judgments about obesity. In the present studies, although disgust was measured rather than

manipulated, it demonstrated moderate-to-strong associations with moralization and remained significant even when adjusting for perceived control. Some studies have found that incidental disgust (i.e., disgust that is unrelated to variables of interest, such as a foul odor being released in the vicinity of study participants who are focused on unrelated tasks) amplifies negative moral judgments, though findings in this area have been mixed (Landy & Goodwin, 2015). Nevertheless, in the present studies disgust appeared to be an important contributor to moral evaluations of obesity, which supports recent studies that likewise link disgust to antiobesity attitudes (e.g., Vartanian, 2010). Future research would benefit from experimental manipulations of disgust that can provide a test of the proposed link between disgust and moralized attitudes toward obesity.

The current study measures should also be improved and expanded upon in future studies. The measure of perceived control was adequate but demonstrated lower reliability in the student samples. It would be prudent to use a more comprehensive measure of control, such as the entire Beliefs About Obese Persons scale (Allison et al., 1991), as well as adding additional items to capture beliefs about environmental causes of obesity, as opposed to biological and psychological causes. The measure of disgust should also be expanded to a multi-item measure, as well as distinguish between emotional disgust reactions and moral disgust, which captures the degree to which people report feeling disgusted by a moral violation. For example, people report feeling "disgusted" by politicians (Vartanian, 2010), which is a type of disgust that is not adequately represented in the current studies. Future research may also benefit from including measures of disgust sensitivity (Lieberman et al., 2012), which was lacking in the present research. The measure of discrimination should likewise be expanded to include a variety of concepts related to discrimination. The current measure contained single items that touched on

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concepts of employment discrimination as well as denial of discrimination, as measured by the general perception of whether obese people face significant discrimination, but more related questions are needed to improve the reliability of these measures. The other items related to whether obese people should be penalized with higher healthcare costs and whether taxpayers should contribute to obesity-related healthcare costs. These should be expanded to include other types of differential treatment of obese persons.

Measures of health risks and moral character traits should also be improved in both structure and content. Both measures asked participants to make explicit comparisons between obese and non-obese persons, which may have led to greater socially desirable responding and created a narrow distribution of responses in which, on average, participants chose the midpoint of the scale for most responses. It may be better to remove the social comparison element and present some participants with a scale that focuses on evaluations of obese persons, and others with a scale for evaluations of non-obese persons. Furthermore, the moral character scale should be revised to capture the moral character dimensions identified by Goodwin, Piazza, and Rozin (2014), which would provide a more nuanced and systematic categorization of different moral traits on which to evaluate obese people. Of course, when possible, behavioral and implicit measures of these constructs would provide a richer picture of the relation between moralization of obesity and perceptions of health risks and moral traits.

Finally, the moralization of obesity measure should be expanded to assess the different motivations that may exist for moral judgments about obesity. For example, some people may conceptualize obesity as a violation of bodily purity, and their concerns may center particularly on the perceived food and lifestyle choices of obese people. Indeed, some studies indicate that people make negative judgments of targets depicted as eating unhealthy fast food, regardless of

the target's weight (McPhail, Chapman, & Beagan, 2011; Steim & Nemeroff, 1995). Thus, for some people, beliefs about the controllability of obesity may be secondary to concerns about obese people "polluting" their bodies with certain foods. Other people may be more concerned with controllability and base their moral judgments on perceived lack of self-control. Relatedly, people could moralize obesity because they feel that obese people place a greater burden on society, thus perceiving obese people to be poor cooperation partners (Van Leeuwen, Hunt, & Park, 2015). The current moralization scale should be expanded in future research to capture these different facets of moralization that may exist.

Ultimately, future research would benefit greatly from considering the contexts in which moral judgments occur and how situational factors may make control attributions and disgust differentially influential. Park and colleagues (2007) found that visual exposure to obese persons significantly increased the association between pathogen sensitivity and negative attitudes toward obese persons. Although they did not use a direct measure of disgust, the results may indicate that the link between disgust and negative obesity attitudes is stronger when seeing or interacting in person with an obese individual. In contrast, control attributions can be thought of as the cognitive component of moralization, and might be more important than disgust when there is no visual exposure to obese people. For example, when thinking abstractly about whether to support or oppose a social policy related to obesity, people may rely more on their beliefs about the controllability of obesity and whether they think obese people should be blamed for their stigmatizing condition. The present research cannot speak to these context-specific motivations underlying moral judgments about obesity, but it provided important preliminary evidence that a) some people moralize obesity, b) control attributions and disgust are important and independent components of moralization, and c) moralization predicts greater endorsement

of discrimination against obese people, exaggeration of health risks associated with obesity, and negative inferences about the moral character of obese people. It is hoped that these findings provide opportunities for future research that will lead to a greater understanding of the processes and consequences of moralization, as well as suggest effective strategies for reducing the harmful effects of moralized attitudes toward obesity.

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Appendix A

Study Measures from Studies 1A – 2B (unless otherwise indicated)

Moralization of Obesity measure
Scale: 1 (Strongly disagree) to 7 (Strongly agree)
1. Gaining an excessive amount of weight is disrespectful to one's body
2. Maintaining control over one's weight is a moral issue
3. Thinness is a moral virtue
4. Obesity is a moral failing
5. Obesity is a sign of personal weakness
6. Obesity is NOT a moral issue (reverse-scored)
7. A person should treat his or her body like a temple
8. I would have no objection to my son or daughter marrying an obese person (reverse-scored)

Perceived Control
Scale: 1 (Strongly disagree) to 5 (Strongly agree)
1. In many cases, obesity is the result of a biological disorder.
2. Obesity is usually caused by overeating.
3. Most obese people cause their problem by not getting enough exercise.
4. Obesity is rarely caused by a lack of willpower.
5. Obese people generally have less self-discipline than normal weight people.

Emotion items
Scale: 1 (not at all) to 5 (a great deal)
To what extent do you feel [disgust/contempt/compassion] when you think about obese people?

Discrimination
Scale: 1 (Strongly disagree) to 5 (Strongly agree)
1. Discrimination against obese people is a serious problem
2. If I were an employer looking to hire, I might avoid hiring an obese person
3. Obese people should NOT pay more for healthcare than non-obese people
4. Taxpayers should NOT have to pay for healthcare costs associated with obesity

Health Risk Ratings

Do you think obese people have a higher risk, lower risk, or the same risk as non-obese people of experiencing the following health conditions?

Please indicate the level of risk for each health condition using the scale below.

Scale: 1 (Much lower risk than non-obese people) to 7 (Much higher risk than non-obese people)

1. High blood pressure;
2. Cancer;
3. Migraine Headaches;
4. Dry Mouth;
5. Heart Disease;
6. Appendicitis;
7. Allergies;
8. Diabetes;
9. Graves Disease;
10. Nerys Syndrome;

Moral Character Ratings

Do you think the following attributes and behaviors are less or more characteristic (i.e., true) of obese people, compared to non-obese people?

Please evaluate each attribute or behavior using the scale below.

Scale: 1 (Much less characteristic of obese people) to 7 (Much more characteristic of obese people)

1. Cheats on relationship partner
2. Contributes equally to group work
3. Intelligent
4. Cheats on taxes
5. Substance abuse problems
6. Generous to others
7. Kind to others
8. Watches pornography
9. Gambling problems
10. Drinking problems (alcohol)
11. Family-oriented
12. Respectful of authority
13. Loses temper easily
14. Spends money irresponsibly
15. Happy
16. Trustworthy

Personal Experiences Related to Obesity (Study 1A)
Please answer the following questions related to personal experiences with obesity.
1. Do you have a family member who is obese? Yes/No
2. Do you have a close friend who is obese? Yes/No

Personal Experiences Related to Obesity (Study 1B – Study 2B)
1. How many of your relatives are obese? [none/one/some/many/all]
2. How many of your friends are obese? [none/one/some/many/all]
3. How do you feel about your own weight? [very dissatisfied/dissatisfied/satisfied/very satisfied]*

*This item was retained for separate analysis but did not feature in analyses in the present studies.

Study 2 Manipulation

Obesity Uncontrollable condition:

For this study, we are interested in understanding how people think and feel about obesity (the condition of being significantly overweight). More than 2 in 3 adults in the U.S are considered overweight or obese (National Institutes of Health, 2012). The majority of obese people put great effort into losing weight but are unsuccessful; and even those who lose weight in the short term usually gain back the weight within 2 years (Mann, 2015). Research shows that self-control (i.e., willpower) is not correlated with weight; even in studies with children, those who have high self-control are just as likely to be overweight as adults (Ridder, 2014). In sum, because recent research suggests that obesity is largely uncontrollable, it's important to understand people's attitudes and beliefs toward this growing problem.

Obesity Controllable condition:

For this study, we are interested in understanding how people think and feel about obesity (the condition of being significantly overweight). More than 2 in 3 adults in the U.S are considered overweight or obese (National Institutes of Health, 2012) Although the majority of obese people report being able to lose weight in the short term, most gain back the weight within 2 years (Mann, 2015), which means they fail to maintain their weight loss goals over time. Research shows that self-control (i.e., willpower) is highly correlated with weight; even in studies with children, those who have high self-control are far less likely to be overweight as adults (Ridder, 2014). In sum, because recent research suggests that obesity is largely controllable, it's important to understand people's attitudes and beliefs toward this growing problem.

Appendix B

Table B1

Multiple Regression Analyses with Perceived Control, Disgust, and a 6-item Moralization Scale as Predictors of Discrimination, Health Risk Ratings, and Moral Character Evaluations (Study 1A)

	Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.11***		.06***		.02**		.02***		.02**	
Control variables										
Model 2	.26***		.10***		.02***		.03***		.02***	
Perceived Control		.54***		.33***		.13***		.19***		-.16***
Model 3	.07***		.01***		.00		.01**		.01***	
Disgust		.29***		.11***		.02		.10**		-.12***
Model 4	.04***		.01**		.02***		.01**		.02***	
Perceived Control		.32***		.24**		.05		.10**		-.04
Disgust		.22***		.09**		-.03		.07		-.08*
Moralization		.26***		.09**		.18***		.13**		-.18***
F(df, df)	127.15 (8, 1107)***		27.64 (8, 1107)***		7.43 (8, 1107)***		10.89 (8, 1107)***		11.16 (8, 1107)***	
Total R^2	.48		.17		.05		.07		.08	
$R^2_{adjusted}$	.48		.16		.04		.07		.07	

Note. The 6-item moralization scale demonstrated good reliability (Cronbach's alpha = .79). Control variables included gender, age, BMI, obese family member and obese friend variables.

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

Table B2

Multiple Regression Analyses with Perceived Control, Disgust, and a 6-item Moralization Scale as Predictors of Discrimination, Health Risk Ratings, and Moral Character Evaluations (Study 1B)

	Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.11***		.02		.003		.01		.05*	
Control variables										
Model 2	.08***		.10***		.06***		.06***		.03**	
Perceived Control		.28***		.31***		.25***		.25***		-.18**
Model 3	.08***		.001		.001		.05***		.03**	
Disgust		.30**		.04		-.04		.24***		-.18**
Model 4	.01		.000		.01		.002		.001	
Perceived Control		.16**		.30***		.23**		.16*		-.13*
Disgust		.26***		.04		-.07		.22**		-.18**
Moralization		.11		-.01		.09		.06		-.002
F(df, df)	12.03 (8, 259)***		4.04 (8, 259)***		2.51 (8, 259)*		4.42 (8, 259)***		4.01 (8, 259)***	
Total R^2	.27		.11		.07		.12		.11	
$R^2_{adjusted}$	.25		.08		.04		.09		.08	

Note. The 6-item moralization scale demonstrated adequate, but lower, reliability in study 1B (Cronbach's alpha = .66). Control variables included gender, age, BMI, obese family member and obese friend variables.

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

Table B3

Psychometric Properties of Study Variables (Study 2A)

	α	N	M	SD	Range Potential	Actual	Skew
Moralization	.86	883	3.37	1.26	1 - 7	1 - 7	0.35
Perceived Control	.76	883	3.47	0.86	1 - 5	1 - 5	-0.54
Discrimination	.74	883	2.62	1.03	1 - 5	1- 5	0.34
High Association Risks	.79	865	6.13	0.69	1 - 7	1.75 - 7	-1.24
Low Association Risks	.75	864	4.29	0.57	1 - 7	1.67 - 7	1.82
Negative Moral Traits	.76	855	4.15	0.44	1 - 7	1 - 7	0.82
Positive Moral Traits	.80	856	4.04	0.44	1 - 7	1 - 7	-0.48
Disgust	-	880	2.42	1.05	1 - 5	1 - 5	0.54
Contempt	-	878	1.90	1.05	1 - 5	1 - 5	1.10
Compassion	-	881	3.08	1.21	1 - 5	1 - 5	-0.20

Table B4

T-tests comparing means between experimental conditions in Study 2A

	Obesity Uncontrollable Condition (n = 444)	Obesity Controllable Condition (n = 439)	
	M (SD)	*M (SD)*	*t*
Moralization	3.33 (1.24)	3.41 (1.28)	n.s.
Perceived Control	3.38 (0.86)	3.57 (0.85)	3.30**
Disgust	2.42 (1.06)	2.42 (1.05)	n.s.
Discrimination	2.62 (1.05)	2.62 (1.02)	n.s.
High Association Risks	6.07 (0.69)	6.19 (0.68)	2.58*
Low Association Risks	4.28 (0.55)	4.31 (0.60)	n.s.
Negative Moral Traits	4.13 (0.37)	4.17 (0.50)	n.s.
Positive Moral Traits	4.05 (0.35)	4.02 (0.52)	n.s.

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

Table B5
T tests comparing means from Study 2A experimental conditions to Study 1A

	Study 1A	Study 2A		Study 1A	Study 2A	
		Obesity Controllable Condition (n = 439)			Obesity Uncontrollable Condition (n = 444)	
	M (SD)	*M (SD)*	*t*	*M (SD)*	*M (SD)*	*t*
Moralization	3.37 (1.27)	3.41 (1.28)	n.s.	3.37 (1.27)	3.33 (1.24)	n.s.
Perceived Control	3.42 (0.87)	3.57 (0.85)	3.127**	3.42 (0.87)	3.38 (0.86)	n.s.
Disgust	2.49 (1.07)	2.42 (1.05)	n.s.	2.49 (1.07)	2.42 (1.06)	n.s.
Discrimination	2.69 (1.06)	2.62 (1.02)	n.s.	2.69 (1.06)	2.62 (1.05)	n.s.
High Association Risks	6.12 (0.64)	6.19 (0.68)	n.s.	6.12 (0.64)	6.07 (0.69)	n.s.
Low Association Risks	4.22 (0.59)	4.31 (0.60)	2.67**	4.22 (0.59)	4.28 (0.55)	n.s.
Negative Moral Traits	4.12 (0.44)	4.17 (0.50)	n.s.	4.12 (0.44)	4.13 (0.37)	n.s.
Positive Moral Traits	4.04 (0.46)	4.02 (0.52)	n.s.	4.04 (0.46)	4.05 (0.35)	n.s.

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

Table B6
Psychometric Properties of Study Variables (Study 2B)

	α	N	M	SD	Range Potential	Range Actual	Skew
Moralization	.81	241	3.67	0.96	1 - 7	1 - 6.13	-0.10
Perceived Control	.63	241	3.52	0.66	1 - 5	1 - 5	-0.66
Discrimination	.58	241	2.32	0.74	1 - 5	1- 4.75	0.26
High Association Risks	.84	241	6.19	0.82	1 - 7	1 - 7	-2.43
Low Association Risks	.86	241	4.68	0.85	1 - 7	2.5 - 7	1.09
Negative Moral Traits	.63	241	4.22	0.42	1 - 7	1.71 - 5.86	-0.11
Positive Moral Traits	.71	241	4.09	0.45	1 - 7	2.5 - 6.83	2.05
Disgust	-	241	1.90	0.99	1 - 5	1 - 5	1.05
Contempt	-	241	1.77	0.95	1 - 5	1 - 5	0.91
Compassion	-	241	3.02	1.13	1 - 5	1 - 5	-0.21

Table B7
T-tests comparing means between experimental conditions in Study 2B

	Obesity Controllable Condition (n = 121)	Obesity Uncontrollable Condition (n = 120)	
	M (SD)	*M (SD)*	*t*
Moralization	3.75 (1.01)	3.59 (0.91)	n.s.
Perceived Control	3.63 (0.65)	3.42 (0.66)	2.53*
Disgust	1.98 (0.98)	1.83 (0.99)	n.s.
Discrimination	2.35 (0.73)	2.29 (0.76)	n.s.
High Association Risks	6.25 (0.82)	6.13 (0.83)	n.s.
Low Association Risks	4.67 (0.80)	4.70 (0.91)	n.s.
Negative Moral Traits	4.23 (0.40)	4.21 (0.45)	n.s.
Positive Moral Traits	4.09 (0.44)	4.09 (0.45)	n.s.

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

Table B8
T-tests comparing means from Study 2B experimental conditions to Study 1B

	Study 1B	Study 2B		Study 1B	Study 2B	
	Full Sample (n = 270)	Obesity Controllable Condition (n = 121)		Full Sample (n = 270)	Obesity Uncontrollable Condition (n = 120)	
	M (SD)	*M (SD)*	*t*	*M (SD)*	*M (SD)*	*t*
Moralization	3.76 (0.95)	3.75 (1.01)	n.s.	3.76 (0.95)	3.59 (0.91)	n.s.
Perceived Control	3.48 (0.70	3.63 (0.65)	2.06*	3.48 (0.70	3.42 (0.66)	n.s.
Disgust	1.88 (0.98)	1.98 (0.98)	n.s.	1.88 (0.98)	1.83 (0.99)	n.s.
Discrimination	2.32 (0.72)	2.35 (0.73)	n.s.	2.32 (0.72)	2.29 (0.76)	n.s.
High Association Risks	6.24 (0.75)	6.25 (0.82)	n.s.	6.24 (0.75)	6.13 (0.83)	n.s.
Low Association Risks	4.73 (0.87)	4.67 (0.80)	n.s.	4.73 (0.87)	4.70 (0.91)	n.s.
Negative Moral Traits	4.22 (0.43)	4.23 (0.40)	n.s.	4.22 (0.43)	4.21 (0.45)	n.s.
Positive Moral Traits	4.08 (0.49)	4.09 (0.44)	n.s.	4.08 (0.49)	4.09 (0.45)	n.s.

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

Table B9

Standardized Regression Coefficients (β) and Change R² Values for Hierarchical Multiple Regressions with Disgust, Control Beliefs, and Moralization as Predictors of Discrimination, High and Low Association Obesity Health Risk Ratings, and Generalized Moral Weaknesses and Strengths (Study 2B)

	Discrimination		High Association Health Risks		Low Association Health Risks		Negative Moral Traits		Positive Moral Traits	
	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.100***		.017		.028		.022		.023	
Control variables										
Model 2	.039**		.084***		.036**		.007		.000	
Perceived Control		.205**		.299***		.195**		.088		.004
Model 3	.084***		.016*		.006		.066***		.012	
Disgust		.302***		.131*		.081		.269***		-.112
Model 4	.067***		.003		.059***		.000		.001	
Perceived Control		.020		.244**		.075		.010		.019
Disgust		.206**		.112		-.009		.261***		-.126
Moralization		.316***		.063		.296***		.025		.045
F(df, df)	10.430 (9, 230)***		3.459 (9, 230)**		3.753 (9, 230)***		2.729 (9, 230)**		0.951 (9, 230)	
Total R^2	.290		.119		.128		.096		.036	
$R^2_{adjusted}$	.262		.085		.094		.061		-.002	

Note. Control variables included the experimental condition (controllable vs. uncontrollable), gender, age, BMI, obese family member and obese friend variables. The F values correspond with Model 4.

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