

2018

The Impact of an Endorsement of Free Will Versus Determinism on Judgment of Weight Management Behaviors

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Philadelphia College of Osteopathic Medicine
Department of Psychology

THE IMPACT OF AN ENDORSEMENT OF FREE WILL VERSUS DETERMINISM
ON JUDGMENT OF WEIGHT MANAGEMENT BEHAVIORS

Jarrett W. Henderson

Submitted in Partial Fulfillment of the Requirements for the Degree of
Doctor of Psychology
June 2018

**PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE
DEPARTMENT OF PSYCHOLOGY**

Dissertation Approval

This is to certify that the thesis presented to us by JAFFET HENDERSON
on the 14TH day of MAY, 2018, in partial fulfillment of the
requirements for the degree of Doctor of Psychology, has been examined and is
acceptable in both scholarship and literary quality.

Committee Members' Signatures:

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Acknowledgements

This work would have been impossible without the guidance of my chairperson, Dr. Stephen Poteau. From my first year in the program, I knew I wanted to study responsibility associated with human agency, and he agreed from that early time to mentor me. Dr. Poteau helped me conceptualize and fine tune theories in a way that I intend to apply in my scientific and public-service pursuits. I am also exceptionally grateful for Dr. Celine Thompson, who graciously stepped in to fill a void in the committee and whose perspective on this topic helped to shape the analysis and theoretical application of this study in a profound way. This study would also not be possible without Dr. Kelly Kollias, who has shaped my professional development and clinical and academic skills in a way that has proved invaluable.

I am grateful for my South Carolina, Pennsylvania, California, New Jersey, and India friends and family (especially my parents and siblings), as they have all pushed me to pursue this doctorate, even when I was unsure if I should. Thank you.

I am the most grateful for my fiancé, who, in her simultaneous pursuit of a doctorate, had the patience to stay up late with me and tolerate my ramblings about this topic. I am excited for our family, career goals, and everything about our future.

This work stemmed from studying writings of Bruce Lee, who has been a constant source of inspiration. I end this with a quote from him that sparked my desire to study human agency and responsibility:

“Knowing is not enough, we must apply; willing is not enough, we must do.”

– Bruce Lee

Abstract

This study examines the relationship between an endorsement of either free will or determinism and judgment of others' weight management behaviors in a general population. Participants completed the Free Will and Determinism – Plus (FAD-Plus) to assess their beliefs in free will or determinism. Two groups were compared for analysis: determinism, which includes both scientific and fatalistic variants, and free will, which includes randomness. After completing the FAD-Plus, participants answered questions regarding their judgment of weight management behaviors on one of two case vignettes designed by the investigator that depict different weight management behaviors and outcomes. Participants then answered questions involving the weight management behaviors depicted in the vignette. Participants also answered questions regarding their overall weight attitudes on the Anti-Fat Attitudes Scale. The hypotheses for this study follow: (a) Participants endorsing free will world views will more strongly judge, both positively and negatively, successful and unsuccessful weight management behaviors, respectively, compared to those endorsing a determinist worldview and (b) There will be a difference between dieters and nondieters on judgments of both successful and unsuccessful weight loss attempts on case vignettes. To assess the relationship between all variables, a multivariate analysis of covariance (MANCOVA) was completed.

Keywords: free will, determinism, moral responsibility, weight management, judgment

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Chapter 1: Introduction

Statement of the Problem

At present, approximately 33% of individuals in the United States are actively attempting to lose weight (Knauper, Cheema, Rabiau, & Borten, 2005). Struggling with adherence to a weight loss regimen is a frequently occurring phenomenon (Knauper et al., 2005). Many dieters not only regain weight that was originally lost, but also eventually exceed their initial weight after a period of time (National Task Force on the Prevention and Treatment of Obesity, 1993). Despite an overall increase in dieting trends, both increases in overall obesity and decreases in adherence are experienced in the United States (Centers for Disease Control [CDC], 2015). This problem has negatively impacted individuals who are hoping to manage their weight more successfully and improve their health (CDC, 2015). This level of recidivism can have a negative impact on beliefs about weight loss, such as the belief that one cannot be successful in future attempts to lose weight (Miquelon, Knauper, & Vallerand, 2012).

Medical costs attributed to weight control issues have steadily increased since 2000 (CDC, 2015). Individuals struggling with weight control pay, on average, \$1,429 dollars per year more for medical costs than those of normal weight (CDC, 2015). As a nation, in 2014, 147 billion dollars was spent on obesity-related medical costs (CDC, 2015). Additionally, 116 billion dollars are spent on diabetes yearly, and more than 200 billion dollars on coronary disease and cancers linked to unsuccessful weight management behaviors (CDC, 2015). Additional expenditures related to weight issues include colorectal and endometrial cancer treatment, osteoarthritis, gallstones, and hypertension (CDC, 2015). Because of the prevalence, costliness, and negative health

outcomes associated with obesity, the identification of factors associated with successful and unsuccessful weight management is needed. One factor associated with an individual's weight management involves stigmatization (Murakami & Latner, 2015). Specifically, judgments by others of one's dieting success or lack thereof are based on preexisting attitude and affect an individual's weight management (Murakami & Latner, 2015).

Many individuals attempting to lose weight find themselves the victims of judgment from society and peers (Murakami & Latner, 2015). The consequences of this weight stigmatization increase negative self-attribution and internalization of weight stigmatization (Murakami & Latner, 2015). These factors could also complicate future success of weight management. Further, the attitudes impacting judgments by others on goal-driven behavior, such as an individual's weight management, are likely a function of the endorsement of a free will or determinist world view. Dieters and nondieters hold differing views on the factors related to weight management success (Ent & Baumeister, 2014). Specifically, research has revealed that in the context of experienced hunger states dieters and nondieters are more likely to endorse a free will and determinist world view, respectively (Ent & Baumeister, 2014).

The majority of individuals in the United States subscribe to a belief in free will (Ent & Baumeister, 2014; Ogletree, Oberle, Harlow, & Bahruth, 2010). Furthermore, most individuals' basic assumptions of human nature incorporate free-will attitudes (Ent & Baumeister, 2014; Nahmias, Morris, Nadelhoffer, & Turner, 2005; Rakos, Laurene, Skala, & Slane, 2008). The earliest data on an endorsement of free will or determinism date back to 1959 in which 72% of individuals described as "community leaders"

endorsed a belief in free will over other ideologies (Nettler, 1959; Rakos et al., 2008). In a more recent account of free-will and determinism endorsements, 79% of adults and adolescents more strongly endorsed free will over determinism ideologies (Rakos et al., 2008). A clear definition of free will has been debated through the literature; however, this study uses the *Oxford Dictionary's* definition of the concept, which states that free will is “the ability to act at one’s own discretion” (“Free Will,” 2015). The *Oxford Dictionary* also describes the antithesis of this concept, determinism, as “the doctrine that all events, including human action, are ultimately determined by causes external to the will” (“Determinism,” 2015). Given this trend toward the endorsement of a free-will world view, there are several implications on how attitudes toward goal-driven behaviors can be understood from an external, nonactor vantage point, possibly further elucidating the foundational aspects of weight management stigmatization.

Free Will and Moral Responsibility

Free will has been linked to negative judgment of another individual’s behavior (Lewis et al., 2011). Furthermore, obese individuals have frequently been the target of negatively valenced judgments regarding their characters and have been stigmatized and described as being amoral (Lewis et al., 2011; Puddester & Wareham, 2013). The moralization of obesity, therefore, can be associated with a belief in free will, which has a pronounced negative effect on judgment of those at an unhealthy weight.

Strong associations have been found between free will and moral responsibility (Clark et al., 2014). Specifically, free will is considered by many a prerequisite for holding individuals responsible for their own actions. Furthermore, free will has been

linked to positive attitudes about one's behavior, such as choosing not to cheat when given the chance and having self-control (Feltz & Cova, 2014). For example, when given the opportunity to cheat while completing computer-based math tests, individuals who were given essays about anti-free-will ideologies (e.g., "free will is an illusion," "free will is a side effect of the architecture of the mind"; Vohs & Schooler, 2008, p. 50) cheated more often on average than individuals who were not given this literature (Vohs & Schooler, 2008). Regarding weight control, it has been suggested that self-punishment and blame are factors in understanding why individuals may not succeed in weight management behaviors (Clark et al., 2014; Williams et al., 1996). In contrast, beliefs in determinism are associated with a decrease in moral responsibility, especially when considering one's own actions (Clark et al., 2014; Vohs & Schooler, 2008). These attitudes generally reflect an overall belief that individuals could or should make prosocial and moral decisions in order to avoid negative consequences, such as unsuccessful goal fulfillment (Clark et al., 2014). Researchers found that when individuals were asked to define free will, responses included themes of acting against one's own short-term interests in the pursuit of long-term goal fulfillment (Baumeister, 2008). These concepts may have an impact on goal-directed behavior, such as weight management, as free will has been linked to higher levels of self-punishment while determinism has been linked to lower levels of self-punishment (Ogletree & Oberle, 2008; Stroessner & Greene, 2001; Williams, Grow, Freedman, Ryan, & Deci, 1996). Evidence that free will versus determinist beliefs are associated with self-related judgments is ample; however, the question remains as to whether or not an ascription to free will or determinism engenders the same effects when judging others' goal-directed

behaviors. In a recent study, researchers observed that a sample of college students attributed self-punishment and blame to a belief in free will (Ogletree, Oberle, Harlow, & Bahruth, 2010). These college students believed that a belief in free will was synonymous with self-punishment and blame regarding the attribution of responsibility (Ogletree et al., 2010). The same sample also attributed lower levels of self-punishment and blame to a belief in determinism. Some researchers have observed a relationship between free will and increased negatively valenced judgments (Vohs & Schooler, 2008). These effects most likely would hold given the research delineating the relationship between the endorsement of free will and morality (Fetlz & Cova, 2014; Ogletree et al., 2010; Stroessner & Greene, 2001). Specifically, weight has taken on a moral dimension (Murakami & Latner, 2015; Puddester & Wareham, 2013), which may be an extension of the espousal of a free-will world view.

Purpose of the Study

A review of the literature uncovered few studies that specifically identify correlations of free will and determinism to judgments of an individual's success or lack of success in managing weight. In order to understand the complexities of weight management, a study must be conducted to determine factors that may influence weight management via perceptions as guided by free will/determinism of weight management by an observer. Conducting this type of study becomes important, as the perceptions of other individuals may become internalized and thus may lead to a decreased likelihood of weight management success. The goal of this study is to understand the judgments of others' weight management behaviors that may accompany endorsements of free will and determinism. In addition, this study helps to identify these factors that may better inform

clinicians to improve adherence of weight management behaviors. To shed light on these behaviors, this study investigates the differences between dieters and nondieters in judgments of an actor's weight management for the purposes of ascertaining whether or not these world view orientations hold.

Review of the Literature

Free Will

Human agency is an explanation of a person's actions or events in a given situation (van Hateren, 2015). Throughout the literature, explanations for these accounts have included free will and determinism (Price, 200; van Hateren, 2015). Overall, free will is the most ascribed philosophical belief, as compared to determinism or compatibilism, when accounting for human agency (Ent & Baumeister, 2014; Rakos et al., 2008; Stroessner & Green, 2001). A clear definition of free will has been debated throughout the literature; however, the *Oxford Dictionary* defines free will as "the ability to act at one's own discretion" ("Free Will," 2015). Some research has defined free will as the power of acting without the constraint of necessity or fate (Ogletree et al., 2010). In other words, as one experiences free will, one acts with the belief that one has the power to break a causal chain of events to achieve a particular goal. Also, an individual must believe that he or she actually preferred to perform the action in question (Libet, 1999). This implicates that an event that is freely chosen is unaffected by any events that preceded it.

Some accounts of human agency have described free will as being innate to the human experience (Clark et al., 2014). In addition, these innate beliefs are associated with harsher and more negative outlooks on moral responsibility (Alquist, Ainsworth, &

Baumeister, 2013; Clark et al. 2014; Ent & Baumeister, 2014; Stroessner & Greene, 2001). Among a preschooler population (4-5 years old), when given the choice to abide by the rules or behave amorally, children chose to abide by the rules; however, they stated that they had the freedom to perform amorally had they wanted to (Chernyak & Kushnir, 2014). This explanation of a hypothetical choice suggests a natural endorsement of free will as an account of their human agency. A central theme behind the children's thoughts and behaviors was the belief that they were constrained by the presence of adult figures to abide by the rules and that in different circumstances they may have behaved amorally (Chernyak & Kushnir, 2014). This link suggests that although free will is largely believed to be innate, most individuals also believe that the presence of a perceived moral figure influences their ability to make their own decisions.

Human experiences, such as guilt, responsibility, praise, and sin, have been linked to actions that are described as freely chosen (Clark et al., 2014). Free will is at the heart of most Western religious, philosophical, and legal understandings of moral responsibility (Clark et al., 2014). This notion asserts that acts of free will are the only acts that deserve credit or blame. Furthermore, strong associations have been found between free will and moral responsibility (Clark et al., 2014; Nichols & Knobe, 2007; Sarkissian et al., 2010). Specifically, free will is considered a prerequisite for holding individuals responsible for their actions (Clark et al., 2014). This belief is upheld also when considering one's own actions, as weakened beliefs in free will have resulted in increased levels of cheating and dishonesty (Clark et al., 2014; Vohs & Schooler, 2008). These attitudes generally reflected a belief that individuals could or should make

prosocial and moral decisions in order to avoid negative consequences (Clark et al., 2014).

Significant Factors of Moral Responsibility

Researchers have shown that most college students favor free will over other explanations of human agency (Ogletree et al., 2010). In studies in which college students read vignettes of individuals performing illegal and unethical acts, students harshly judged the acts of others (Ogletree et al., 2010). These acts were judged less harshly in comparison to groups of students who did not ascribe to a belief in free will (Ogletree et al., 2010). In the study, gender was a significant variable such that women were more likely than men to ascribe freewill explanations for outcomes to the vignettes versus a more deterministic explanation of outcomes (Ogletree et al., 2010). This finding suggests that women may uphold a higher moral responsibility when considering the acts of others. Beliefs in determinism have been associated with decreased moral-responsibility beliefs while free-will attitudes generally reflect an overall belief that individuals could or should make prosocial and moral decisions in order to avoid negative consequences (Clark et al., 2014; Vohs & Schooler, 2008). These findings are important to consider when exploring the judgment of others' behaviors regarding weight management endorsement, such that when considering the acts of other individuals who do not align with one's own world view, harsher judgment was passed. In addition, the fact that women were more likely than men to stigmatize others' weight behaviors could provide a foundation for understanding how personal beliefs can impact other's behaviors with regard to weight management (Eisenberg, Neumark-Sztainer, Haines, & Wall, 2006; Ent & Baumeister, 2014).

Determinism

Determinism is an account of human agency antithetical to free will. Determinism can be defined as “behavior that is completely caused by genetics, past experiences, and current circumstances” (Ogletree et al., 2010, p. 143). This explanation denies the opportunity for an individual to choose or participate in an event without some prior external chain or causes (“Determinism,” 2015; Stroessner & Greene, 2001). Because of these internal and external causalities, holding a belief in strict determinism conflicts with holding a belief in free will; however, determinism has delineations, and thus, the two are not necessarily mutually exclusive (Stroessner & Greene, 2001).

When attempting to describe delineations of determinism, researchers have described schools of thought, such as compatibilism, hard determinism, and soft determinism (“Determinism,” 2015; Donagan, 1987; Ogletree & Oberle, 2008). A soft deterministic approach states that free will and (hard) determinism are compatible, and because of this belief, this school of thought is also referred to as *compatibilism*. Individuals with this belief assert that although deterministic qualities, such as genetics and external environmental events, have an influence on decisions and endorsement, individuals have personal choice and can choose to overcome these causal events to make a newly formed decision (Ogletree & Oberle, 2008). Of note, this explanation is separate from free will, which does not claim that deterministic qualities influence decisions and denies that randomness of external events influence decisions (Ogletree & Oberle, 2008). In addition, with free will, choices are viewed as a precursor to individual action rather than as events that determinism ascribes (Donagan, 1987). Compatibilists typically hold the belief that both free will and determinism can explain outcomes in life. Contrary to

this notion, incompatibilists believe that the two are indeed mutually exclusive (Feltz & Cova, 2014).

A different view, (hard) determinism takes the stance that all behaviors are the product of decisions that are caused by a combinations of factors outside of an individual's control, such as genetics, past memories and experiences, and environmental circumstances ("Determinism," 2015; Monroe, Dillon, & Malle, 2014). This view is typically and sometimes erroneously associated with general determinism; however, because of the possibility of soft determinism, a distinction is necessary to delineate hard determinism from general determinism.

Recent studies have attempted to explain delineations of determinism by emphasizing the differences between psychosocial and philosophical determinism (Stroessner & Greene, 2001). A belief in psychosocial determinism asserts that solely environmental factors determine human agency and nature, whereas a belief in philosophical determinism asserts a belief in an external force or higher power that may control one's behavior or act on one's behalf. For the purposes of this study, a general view of determinism that states that behaviors are largely influenced and caused by events out of one's control will be considered (Stroessner & Greene, 2001). These will include scientific and fatalistic determinism as part of the determinism grouping.

Free Will, Determinism, Punishment, and Blame

Modern research has attempted to find a correlation between endorsements of either free will or determinism and attitudes toward punishment and blame (Clark et al., 2014). Historically, research has implicated a strong endorsement between free will and

punishment and blame while a weak endorsement has been found between determinism and punishment and blame (Stroessner & Greene, 2001). Most explanations of determinism have stated that it does not align with punishment and retribution (Stroessner & Greene, 2001). Overall, an endorsement of free will has important consequences for both prosocial actions and punitive judgments (Clark et al., 2014). One research study found that most college students ascribed to free will over determinism (Ogletree et al., 2010). Furthermore, these students believed that individuals should be punished for their amoral behaviors (Ogletree et al., 2010). These students also had a tendency to find individuals morally responsible for their actions as compared to other students who ascribed to a belief in determinism (Ogletree et al., 2010). Furthermore, an endorsement of free will was strongly associated with a heightened sense of morality as a legitimate and important dimension of life and overall higher standards of personal moral conduct (Bergner & Ramon, 2013). However, some researchers have argued against the necessity of having a belief in free will as a predecessor for prosocial moral endorsement (Feltz & Cova, 2014). When considering goal-directed behaviors, such as weight management, one must understand variables that may affect adherence to goals. In this case, the point is made that free will or determinism endorsements have an impact on the judgment of an actor's weight management. Some of these endorsements, such as those postulated from free will, reflect an ascription of responsibility and morality connected to behaviors. Consequently, individuals struggling with weight management may internalize these beliefs and may thus become less successful at their weight management.

Free Will, Determinism, and Weight Management

Free will and determinism have recently been linked to weight control (Ent & Baumeister, 2014). In a study comparing free will and determinism to a dieting and a nondieting population, individuals in both groups who felt hunger more intensely believed less in free will (Ent & Baumeister, 2014). Particularly among nondieters, the stronger the uncontrollable physiological feeling of hunger, the more individuals believed themselves to be in less control over their eating behaviors (Ent & Baumeister, 2014). In other words, nondieters may have ascribed to more deterministic explanations for their hunger rather than to free-will explanations. Conversely, the more that dieters experienced an intense feeling of hunger, the more that they believed in free will. This implies that among dieters, the stronger the perceived physiological feeling of hunger, the more they believed themselves to be in control of their eating behaviors (Ent & Baumeister, 2014). Furthermore, these individuals believed that their free will was validated, as they reported being able to control their eating behavior when they felt hunger. Conversely, nondieters who felt physiological urges of hunger reported not being able to control their eating behaviors when they felt hunger (Ent & Baumeister, 2014). This becomes important when considering weight management behaviors in that dieters and nondieters experience similar physiological drives but have opposite explanations of the experience. In this sample, free will (i.e., control) appeared to relate to stronger physiological hunger states as compared to determinism beliefs (i.e., uncontrollable hunger; Ent & Baumeister, 2014). The differences between the groups were explanations of the origins of the hunger and also the endorsement that followed; nondieters believed that they were less in control of their eating behaviors (i.e., a deterministic mindset),

whereas dieters believed that they were more in control of their behaviors (i.e., a free-willed mindset). Of particular importance are the potential implications of the assessment/judgment of dieters' weight management behaviors by nondieters. That is, if nondieters espouse the generous interpretation that experienced hunger states are beyond their control while dieters do not harbor such a generous interpretation and instead describe experienced hunger states as within their complete volitional control, do nondieters extend the same courtesy of interpretation, and therefore negative judgment, to dieters' weight management behaviors?

The Moralization of Weight

Additional research has found that individuals who accepted their own weight, regardless of being healthy or not, had a tendency to view other individuals of healthy weight as having good morals and, thus, judged healthy persons less harshly than they judged nonhealthy persons (Murakami & Latner, 2015). These same individuals had a tendency to view individuals at unhealthy weight levels as having poor morals and judged them more harshly than those at healthy weight levels (Carels et al., 2014; Murakami & Latner, 2015; Puddester & Wareham, 2013). In contrast, individuals who were less accepting of their own weight did not view individuals of unhealthy weight as having poor morals (Murakami & Latner, 2015). Furthermore, individuals who acted on harsh judgments (i.e., shaming) believed that this behavior would catalyze weight management success in those whom they judged (Puddester & Wareham, 2013). These individuals also believed that other individuals were responsible for their obesity and that weight management failure is the result of a lack of willpower (Puddester & Wareham, 2013). Contrary to this belief, these types of behaviors have been associated with failed

weight management attempts and also the development of eating disorders in weight-victimized individuals (Puddester & Wareham, 2013). Some researchers have observed that beliefs such as these begin as early as preschool, where obese children are viewed as undesirable playmates because they may be slow and unable to keep up with the pace of play (Puddester & Wareham, 2013). These judgments and resulting behaviors can persist into adulthood and may influence the current prevalence of unsuccessful weight management attempts (Puddester & Wareham, 2013). As adults, these same individuals may find themselves less likely to be hired or may receive fewer promotions than nonjudged counterparts (Puddester & Wareham, 2013). These attitudes about the responsibility of weight behaviors may influence the weight stigma that an individual may experience, and thus, individuals struggling with weight may internalize these stigmatizing attitudes, possibly leading to poorer weight adherence.

Weight Management Stigma

Stigmatized beliefs regarding unsuccessful weight management behaviors have been linked to overall lower healthcare and poorer body satisfaction (Murakami & Latner, 2015). Whereas successful weight management has been linked to increased self-esteem and stable anxiety, the evidence suggesting that weight loss could reduce weight-related stigma has been mixed (Fardouly & Vartanian, 2012; Latner, Ebner, & O'Brien, 2012; Murakami & Latner, 2015). In addition, antifat attitudes and weight stigma have been categorized as general prejudice and reflect the idea that willpower can achieve weight management success (Crandall, 1994). Researchers have also suggested that the weight-stigmatizing and antifat attitudes are akin to intolerances, such as racism (Crandall, 1994). Among many types of stigma, body dissatisfaction and weight

stereotypes stand out as factors decreasing successful weight management (Murakami & Latner, 2015). Because stigmatizing beliefs impact an individual's weight behaviors, one must understand factors that may contribute to these beliefs. Free-will and determinism beliefs may influence attitudes about others' weight management, in turn possibly leading to internalization of those attitudes by the attempt to lose weight. A possible result of this chain of events is that the internalization of others' weight stigmatization would lead to poorer weight management.

Weight Stereotypes and Stigma

Weight stereotypes endorsed among adolescents are typically manifested through teasing (Eisenberg et al., 2006). Nineteen percent of teenage boys and 13% of teenage girls have reported teasing with regard to their weight (Neumark-Sztainer et al., 2001). These reports increased among overweight boys (50%) and overweight girls (45%; Neumark-Sztainer et al., 2001). Some long-term effects of the weight-related teasing have included depression and the development of disordered eating (Ent & Baumeister, 2014). These effects were found at a particularly high rate among adolescent girls (Ent & Baumeister, 2014). Additional studies have found associations among individuals being teased about their weight and low self-esteem, anxiety, depression, and suicidal ideation (Eisenberg et al., 2006). Furthermore, in a sample of male and female adolescents ($n = 2,516$), approximately 33% of male and 50% of female adolescents reported being teased about their weight (Eisenberg et al., 2006). Some longitudinal studies have found that the negative effects of negative weight attitudes and teasing, such as poorer body satisfaction, can be long term (Eisenberg et al., 2006). More research is attempting to understand how obese individuals may perceive and respond to these different types of stigma and

teasing. Individuals' responses to these types of stigma is important as the moralization associated with poor weight management has an effect on weight management performance. Furthermore, these weight-stigmatizing beliefs may be related to an endorsement of free will/determinism, possibly helping to explain the chain of events that influences an individual's unsuccessful weight management.

Obesity stigma exists in more than just school settings and lately has been found in many institutions and other cultural settings (Lewis et al., 2011). In a study of obese Australian adults ($n = 141$), researchers examined participants' responses to stigma related to their own weight on self-report questionnaires. Overall, participants rarely challenged any stigmatizing attitudes toward their weight, whether they were direct (e.g., being teased in public), indirect (e.g., people judging their food decisions in a restaurant), or environmental (e.g., not being able to fit in certain clothes at a clothing store). Furthermore, many individuals indicated that they believed they deserved the teasing and bullying they experienced (Lewis et al., 2011). This study underscores the link between internalized weight management stigma and body dissatisfaction.

Summary

The relationship between free will/determinism and moral responsibility/judgment has been well supported throughout the literature (Feltz & Cova, 2013; Ogletree et al., 2010; Rakos et al., 2008; Vohs & Schooler, 2008; Stroessner & Greene, 2001). This moral responsibility is also linked to weight stigma and bullying behaviors (Brewis, 2014; Carels et al., 2014; Latner, Barile, Durso, & O'Brien, 2014; Lewis et al., 2011; Murakami & Latner, 2015; Puddester & Wareham, 2013).

Furthermore, moral responsibility has been associated with prosocial behaviors, such as attempts to lose weight and alignment of personal body image to societal demands (Murakami & Latner, 2015). This researcher was unable to uncover studies that attempted to define a relationship between free will and determinism and moral responsibility and judgment of another individual's weight management behaviors. Because of the high rates of failed weight management behaviors and poor body image reported in American culture, finding an additional variable that may explain a portion of these difficulties could inform better treatment strategies in psychotherapy (CDC, 2015). Furthermore, one must understand the assessment of others' attempts at weight management because of pressures to conform to societal demands. Examining more variables that influence adherence to weight management behaviors may lead to an understanding and identification of possible supports in weight loss endeavors.

Thirty-three percent of Americans are actively attempting to lose weight, and many individuals attempt dieting as a way to manage their weight; although some individuals are successful in their attempts, many regain the weight they originally lost (Knauper et al., 2005; National Task Force on the Prevention and Treatment of Obesity, 1993). Despite an overall increase in dieting trends, both increases in overall obesity and decreases in adherence are experienced in the United States (CDC, 2015). Furthermore, some reports have estimated that by 2030, approximately 115 million adults in the United States will be overweight (Wang, McPherson, Marsh, Gortmaker, & Brown, 2011). These reports warrant an understanding of possible distinctions of the attitudes of dieters and nondieters on weight management behaviors. Overall, the goal of this research study was to attempt to find a relationship between an endorsement of either free will or

determinism and the resulting judgment of an actor's weight management behavior. An analysis of dieters' versus nondieters' attitudes was explored to provide more informed results. Individuals who struggle with weight may internalize weight-stigmatizing judgments, and by understanding the role that moralization and judgment of weight behaviors may play through free will/determinism attitudes, this link could provide more insight into some of the factors that may lead to unsuccessful weight management behaviors.

Chapter 2: Research Question and Hypotheses

Research Question

Do attitudes of free will and determinism differentially impact the judgment of another person's success or failure in weight management? To understand if a relationship exists between an endorsement of either free will or determinism and judgment of weight management behaviors in a hypothetical scenario and to understand the presence of weight stigmatization in these groups, the following hypotheses will be tested:

Hypothesis 1

H₁: Participants endorsing free-will world views will more strongly judge, both positively and negatively, successful and unsuccessful weight management behaviors respectively, compared to those endorsing a determinist world view.

This hypothesis postulates that individuals who endorse having free will judge another individual's weight management success and failure more extremely (positive and negatively, respectively) than individuals who endorse believing in determinism. This hypothesis was derived in alignment with research that has shown that individuals who believe in free will hold others to be responsible for their actions (Feltz & Cova, 2014; Murakami & Latner, 2015; Ogletree et al., 2010).

Hypothesis 2

H₁: There will be a difference between dieters and nondieters on judgments of both successful and unsuccessful weight loss attempts in case vignettes.

This hypothesis is proffered for the purposes of considering whether currently being in a dieting state could impact judgment of another person's weight management behavior. The rationale is based on research that suggests that nondieters ascribed to more deterministic explanations for their hunger rather than free-will explanations. Furthermore, dieters who experienced an intense feeling of hunger endorsed stronger beliefs in free will (Ent & Baumeister, 2014). Furthermore, these individuals believed they were better able to control their eating behaviors when they felt hunger. Conversely, nondieter, who felt physiological urges of hunger reported not being able to control their eating behaviors when they felt hunger. Thus, the hypothesis is based on the rationale that dieters would be associated with free will beliefs and nondieters would be associated with deterministic beliefs. Therefore, dieters should judge another person more harshly for their unsuccessful weight management attempts and nondieters should not judge them as harshly, as compared to the dieting group.

Chapter 3: Method

Overview

This research study examined the relationship between an endorsement of a belief in either free will or determinism and the resulting judgment of weight management behaviors. Data were collected from male and female participants aged 18 years and older who had an interest in participating in a study related to weight management. This study employed a correlational design to measure the extent to which these variables are related. Participants were recruited via online methods and by convenience sampling. This study used a demographics questionnaire, the Anti-Fat Attitudes (AFA) Scale, the Free Will and Determinism-Plus (FAD-Plus) scale, and case vignettes written by the investigator. All data used in this study were collected online from SurveyMonkey.com and were then imported into SPSS. Online social-media outlets, such as Facebook, Reddit, Twitter, and the Mechanical Turk research website, were used to recruit participants. In addition, recruitment through an electronic flier to the community listserv at the Philadelphia College of Osteopathic Medicine (PCOM) was used. Data were collected until a sufficient number of individuals was achieved.

Design and Justification

A between-subjects design was used to study the relationships between free-will and determinism ideologies and judgment of others' weight management endorsements. A within-subject design was used to study relationships among ideologies as indicated by their outcome measure ratings and age and gender differences.

Participants

Participants in this study included 211 individuals from a general population in North America. The power analysis was conducted to calculate sample size with an a priori sample size calculator for a MANCOVA with global effects showed that to achieve a ces effect size ($f^2 = .35$) with power = .95 and $\alpha = .05$, a minimum of 252 participants would be needed. Male and female participants were aged 18 years and older. All participants in this study were volunteers.

Participant Demographics

Data were collected from 280 participants via social media and e-mail listservs. Overall, 211 participants completed all of the questions required to be included in the study ($N = 211$), and a listwise deletion was implemented for the remaining participants who had more than 10% of responses missing. Of the 211 participants, 25.0% were male ($n = 53$) while 74.9% were female ($n = 158$). With regard to ethnicity, 64.5% were White, non-Hispanic ($n = 136$); 10.0% were African American or Black ($n = 21$); 3.8% were Hispanic ($n = 8$); 17.1% were Asian ($n = 36$); .5% were American Indian or Alaska Native ($n = 1$); .5% were Native Hawaiian or Other Pacific Islander ($n = 1$); and 3.8% identified as Other ($n = 8$). Considering age, 66.4% of participants were 18 to 29 years of age ($n = 140$), 20.4% were 30 to 39 years of age ($n = 43$), 2.8% were 40 to 49 years of age ($n = 6$), and 10.4% were 50+ years of age ($n = 22$). Regarding previous dieting attempts (i.e., "Have you ever attempted a diet, either through professional assistance or self-maintained?"), 81.5% of individuals reported a previous dieting attempt ($n = 172$) while 18.5% indicated that they had never dieted ($n = 39$). Specifically, 20.9% of

individuals reported having more than 10 dieting attempts in the past ($n = 44$), 15.5% having 5 to 10 attempts in the past ($n = 33$), 45.5% having 1- to 5 attempts in the past ($n = 96$), and 18% indicating no previous dieting attempts ($n = 38$). With regard to current dieting status, 22.3% of respondents indicated that they were dieting at the time of the survey ($n = 47$) while 77.7% of respondents indicated that they were not dieting at the time of the survey ($n = 164$). Considering exercise in a given week, 15.2% of participants ($n = 32$) endorsed never exercising, 70.1% of participants ($n = 148$) endorsed exercising one to five times in a week, 14.2% of participants ($n = 30$) endorsed exercising five to 10 times in a week, and .5% exercised more than 10 times in a week ($n = 1$).

Grouping participants into Free-Will or Determinism categories was determined by calculating mean scores on the FAD-Plus. Individuals were then grouped according to their own relative higher score on a combination of Free Will and Randomness versus a combination of Scientific and Fatalistic Determinism. Each participant's score on the FAD-Plus was examined to evaluate whether his or her free-will score or determinism score was higher. Thus, if the combined total of free-will and randomness ratings was greater than the combined total of scientific and fatalistic determinism ratings, that participant was placed in the free-will group. Conversely, if the combined total of scientific and fatalistic determinism ratings was greater than the combined total of free-will and randomness ratings, that participant was placed in the determinism group. Overall, 172 participants endorsed having stronger Free-Will ($M = 3.24$, $SD = .39$) beliefs, including Randomness, while 39 participants endorsed having stronger Determinism ($M = 3.10$, $SD = .39$) beliefs, including both Scientific and Fatalistic delineations. Table 1 illustrates the sample demographics. With regard to gender and

groupings of free will and determinism, 48 male participants were placed in the free-will group while the remaining five were placed in the determinism group. Of female participants, 124 were in the free-will group while 34 were in the determinism group.

Table 1

Demographic Variables

Characteristics	<i>n</i>	%
Gender		
Female	158	74.9
Male	33	17.5
Age range (years)		
18-29	140	66.4
30-39	43	20.4
40-49	6	2.8
50+	22	10.4
Ethnicity		
White, non-Hispanic	136	64.5
Asian	36	17.1
African-American or Black	21	10.0
Hispanic	8	3.8
Other	8	3.8
American Indian or Alaskan Native	1	.5
Native Hawaiian or Other Pacific Islander	1	.5
Prev. dieting attempts		
10+	44	20.9
5-10	33	15.5
1-5	96	45.5
Current dieting status		
Currently Dieting	47	22.3
Not Currently Dieting	164	77.7
Exercise freq. per week		
10+	1	.5
5-10	30	14.2
1-5	148	70.1
Never	32	15.2
Groupings		
Free will	172	81.5
Determinism	39	18.5

Inclusion and Exclusion Criteria

Individuals with a documented medical or mental-health history consistent with any of the following were excluded from the study: developmental disorder, eating disorder, past psychiatric hospitalization, traumatic or acquired brain injury, or neurological degenerative disorder. No participants had a documented medical or mental-health history consistent with this criterion. No race, gender, or religious populations were excluded from the study. In addition, only North American populations were included in this study, as non-Western populations may not attribute personal responsibility with regard to eating behaviors.

Recruitment

Participants were eligible to receive an Amazon gift card for their participation. To maintain confidentiality, participants were prompted to enter an anonymous e-mail on an external website to receive the gift card.

Materials

Informed consent forms were approved by the Philadelphia College of Osteopathic Medicine's Institutional Review Board and contained information about procedures, benefits and risks of participating, how to acquire the results of the research, availability of counseling services, voluntary participation, and contact information of the researcher. The purpose of the study also was included on the consent form. A demographics questionnaire was given prior to the study to collect data regarding age, gender, education, socioeconomic status, and religious beliefs. The study included a measure to assess free-will and determinism beliefs, a questionnaire regarding beliefs

about antifat attitudes, and a vignette that was created by the researcher in which the participants were asked to judge outcomes of two difference scenarios of weight management.

Independent Variables

The independent variables included the following two groups as identified by the FAD-Plus: free will, which includes randomness, and determinism, which includes scientific and fatalism variants. Additional independent variables included a grouping of dieters and nondieters for comparison in Hypothesis 2.

Measures

The Free Will and Determinism -Plus (FAD-Plus) Scale

The FAD-Plus (Appendix A; Paulhus & Carey, 2011) is a 27-item measure of lay beliefs in free will and three closely related constructs: scientific determinism, fatalistic determinism, and randomness. The survey is a Likert scale ranging from 1 (*totally disagree*) to 5 (*totally agree*). A score of 3 indicates that a participant neither agrees nor disagrees with the statement. The participants were asked to select the number along the scale that most closely describes their beliefs. Final scores on the survey indicated a likely endorsement to free will, scientific determinism, fatalistic determinism, or randomness. The final scoring results on the FAD-Plus determined the groupings for comparison between ascribed beliefs in either free will or determinism. The free-will group and the randomness group were grouped together. The determinism grouping included both the scientific and fatalistic determinism types; however, analyses of descriptive differences between the groups were completed. Participants were matched to

groups based on an alignment in either free will or either of the determinism categories, depending on the group in which they had a higher relative score (e.g., a participant who had a higher determinism score compared to free-will score was placed in the determinism group).

The FAD-Plus has alpha reliabilities at the following levels: Free Will, .69; Scientific Determinism, .69; Fatalistic Determinism, .82; and Unpredictability (Randomness), .63 (Paulhus & Carey, 2011). As the FAD-Plus is an improvement upon an earlier version, validity of this version of this measure is currently untested. Compared to the previous version, the FAD-4, the FAD-Plus has improved face validity, as subscales were renamed as the following: “Fate subscale” to “Fatalistic Determinism”; “Chance subscale” to “Randomness” to “Unpredictability”; and “Scientific Causation” to “Scientific Determinism” (Paulhus & Carey, 2011). This improvement was made to assist with the clarity of free-will and determinism constructs. Factor analyses (i.e., exploratory [EFA] and confirmatory [CFA]) were completed between the two scales and demonstrated improved independence between the improved constructs (Paulhus & Carey, 2011).

Anti-Fat Attitudes (AFA) Scale

The AFA Scale (Appendix B; Crandall, 1994) is designed to test explicit weight stigma of individuals who are obese and overweight. The AFA Scale is composed of three subscales: dislike, fear, and willpower. A principal components factor analysis with varimax rotation of the factors with eigenvalues greater than 1.0 assessed that the three domains meaningfully describe the intended areas (dislike, $\alpha = .84$; fear, $\alpha = .79$;

willpower, $\alpha = .66$). Eigenvalues for each factor were 3.6 (Dislike), 2.1 (Fear), and 1.9 (Willpower). The scale is rated on a 9-point Likert scale ranging from 0 (*Very Strongly Disagree*) to 8 (*Very Strongly Agree*), with the score ranging from a possible 0 to 117, with higher scores indicating higher antifat attitudes. Upon completion, scores are separately tallied for each of the three subscales. Any score greater than zero (0) indicates explicit weight stigma, with higher scores indicating a greater level of endorsed weight stigma. For each of the subscales, a higher score would reflect greater negative attitudes toward obese individuals. An example of the Dislike scale is “I dislike people who are overweight or obese”; an example of the Fear scale is “I worry about becoming fat”; and an example of the Willpower scale is “Some people are overweight because they have no willpower.”

Case Vignettes

Case vignettes (Appendix C) were modeled after existing studies that represented a free-will scenario in one situation and determinism in a separate situation (Clark et al., 2014; Nichols & Knobe, 2007). In this study, participants were exposed to one of two case vignettes designed by the investigator that depict different weight management behaviors and outcomes. Participants then answered questions involving the weight management behaviors depicted in the vignette. The vignettes were designed to assess an individual’s judgment of another’s weight management behaviors and success.

Participants were to judge hypothetical weight management behaviors across two different scenarios. Vignette A presented a free-will scenario in which a character makes weight management decisions of his own choice (e.g., chooses whether or not to break a gym schedule, consumes fast food vs. making healthy eating choices). Vignette B

presented a determinism scenario in which a character makes weight management decisions in response to factors perceived to be out of his own control (e.g., physical illness, socioeconomic status factors).

In the vignette conditions, the individual in the free-will vignette achieved successful weight management behaviors while the individual in the determinism scenario did not achieve successful weight management behaviors. In all conditions, the free-will character makes weight management decisions of his own choice while the determinism character makes weight management decisions in response to factors perceived to be out of his own control. Follow-up questions assessed participants' views on whether or not they believed that an individual is responsible for his or her weight management.

Participants addressed whether they believed a different outcome in each of the vignettes could have been possible. In addition, they addressed the extent to which they believed the characters in the vignettes were able to exercise their own free will. Participants then used a 5-point Likert scale to indicate their degree of belief as to whether the individual was responsible for his actions. For the first question, "How much do you believe that Lee is responsible for his weight gain?," participants rated their beliefs on the following scale: 5 (*totally not responsible*), 3 (*neither agree nor disagree*), and 1 (*totally responsible*). For the second question, "How much do you believe that Lee could have had a different outcome?," participants rated their beliefs on the following scale: 5 (*totally disagree*), 3 (*neither agree nor disagree*), and 1 (*totally agree*). For the third question, "How much do you believe that Lee exercised his own free will?," participants

rated their beliefs on the following scale: 5 (*totally did not exercise*), 3 (*neither agree nor disagree*), and 1 (*exercised*).

The case vignettes included a positive or negative view on others' weight management behaviors. This variable included participants' views on whether or not they believed that individuals are responsible for their weight management or not in a hypothetical scenario. Participants also addressed whether they believed a different outcome could have occurred in each of the vignettes and also the extent to which they believed the characters in the vignettes were able to exercise their own free will. To measure whether the characters were able to exercise their own free will, participants were assigned vignettes to assess the participants' views on whether or not that individual in the vignette deserved his weight management outcome:

Free Will: An elementary school teacher has been attempting to lose weight for the past two years. He joined a fitness program last year, which included a nutritionist, and has been able to keep his weight off for the past six months.

Determinism: A physician diagnosed with hypothyroidism has been attempting to lose weight for the past two years. He joined a fitness program last year, which included a nutritionist, but has not been able to keep his weight off for the past six months.

Demographics Questionnaire

A demographic questionnaire (Appendix D) was given prior to receiving any of the experimental assessments via SurveyMonkey. The questionnaire included the

following items to be included in analysis: age, race, gender, previous or current dieting attempts, and number of dieting attempts.

Procedure

Prior to recruitment and investigation, approval was obtained from the Philadelphia College of Osteopathic Medicine Institutional Review Board (#7-028X). As this study was expedited and involved online, anonymous data collection, informed consent was not needed. Each participant was given an identifying number to ensure anonymity. Identifying information, such as name or social security number, was not included as part of the data collection process. The data were recorded in the Survey Monkey database and then imported into the SPSS computer analysis program.

This research study is a correlational nonexperimental design, as it examined the relationship between the presence of a belief in free will or determinism and weight control attitudes.

Participants electronically received a link that hosted the survey and consent to participate in the study. After obtaining informed consent, the participants completed a demographics questionnaire. Each participant then received the FAD-Plus, AFA Scale, and both case vignettes. The participants were then instructed to read the directions carefully and then to complete the surveys to the best of their ability. The participants were then given the opportunity to respond in a blank field, electronically, regarding any questions, comments, or concerns they may have had and were thanked for their cooperation. Administration from beginning to end was estimated to be 15 to 20 minutes.

Chapter 4: Results

Descriptive Statistics

Participants in this study were given a measure to assess their free-will and determinism beliefs (FAD-Plus) and also their antifat attitudes (AFA Scale). They were presented with case vignettes to judge another person on his weight management behaviors. Higher scores on the vignettes represented the belief that the character in the vignette (“Lee”) would be more responsible for his weight loss or gain, that the outcome could have been different, or that free will was exercised. With regard to responses to questions on the first vignette condition (i.e., Case Vignette 1), the free-will group had a mean score of 4.53 ($n = 172$, $SD = .48$), while the determinism group had a mean score of 4.20 ($n = 39$, $SD = .59$). On the second vignette (i.e., Case Vignette 2), the free-will group had a mean score of 3.44 ($n = 172$, $SD = .84$), while the determinism group had a mean score of 3.20 ($n = 39$, $SD = .80$). These results indicated that individuals who endorsed free will had higher scores on both vignettes than those of the determinism group. Specifically, these results indicated that the free-will group, more so than the determinism group, rated that across all conditions they believed the character to be more responsible than not for his weight gain, that the outcome could have been different, and that free will was exercised. With regard to the AFA Scale, the free-will group had a mean score of 56.57 ($n = 172$, $SD = .13.95$), while the determinism group had a mean score of 54.10 ($n = 39$, $SD = 15.30$), indicating that individuals who endorsed free will had more antifat attitudes than those who endorsed determinism. Table 2 illustrates the means and standard deviations of the measures in this study.

Table 2

Psychometric Properties of the Major Study Variables

Measure	FW & DET Groups	<i>M</i>	<i>SD</i>
Case Vignette 1	FW	4.53	.48
	DET	4.20	.59
Case Vignette 2	FW	3.44	.84
	DET	3.20	.80
AFA Total	FW	56.57	13.95
	DET	54.10	15.30

The objective of this study was to test differences between groups (i.e., Free Will and Determinism) in judgments of weight management behaviors across free-will/determinism groups and also dieter/nondieter groups. To determine if differences existed between these two groups, a within-subject ($N = 211$) multivariate analysis of covariance (MANCOVA) was conducted using the case vignettes and the AFA Scales as an outcome measure. By considering guidelines for effect size proposed by Cohen (1988) for partial eta squared, one can observe that an overall intermediate effect size was determined between the free-will and determinism groups on outcomes of the case vignettes and the AFA Scale (.051). With regard to Case Vignette 1, an intermediate effect size was observed (.049) while a small effect size was found between the free-will and determinism groups and outcomes on Case Vignette 2 (.009) and also with outcomes on the AFA Scale (.004).

A MANCOVA was used to prevent the possibility of making a Type 1 error when using multiple ANCOVAs. All analyses were conducted using SPSS Version 23.0

statistical software for Windows (IBM Corp., 2015). The independent variables were beliefs in free will (and randomness)/determinism (scientific or fatalistic) and dieters/nondieters. The dependent variables were judgment of weight management behaviors as measured by Likert-scale ratings from two case vignettes and also antifat attitudes.

Hypothesis 1

A series of MANCOVAs was used to examine age and gender as covariates, the attitudes of weight management and antifat attitudes as dependent variables, and attitudes of free will and determinism and also dieters/nondieters as independent variables. The homogeneity of variance assumption was tested for all subscales. Based on a series of Levene's F tests, the homogeneity of variance assumption indicated that the error variance of the dependent variables was equal across all conditions (i.e., Free Will and Determinism groups) for both vignettes (Case Vignette 1: $p = .053$; Case Vignette 2: $p = .692$) and the Antifat Attitudes ($p = .301$). Furthermore, the Box's M value of 10.37 was associated with the p value of .122, which was interpreted as nonsignificant. Thus, the covariance matrices between the groups were assumed to be consistent for the purposes of the MANCOVA. Bartlett's test of sphericity ($p = .00$) indicated a sufficient correlation between the dependent variables (i.e., case vignettes). A statistically significant difference was found between the free-will and determinism groups and their judgment of weight management behaviors, $F(3, 205) = 3.705$, $p = .013$, Wilks's $\Lambda = .949$, partial $\eta^2 = .051$. This significant F indicates that significant differences exist between the Free Will and Determinism groups on a linear combination of the two dependent variables (i.e., Case Vignettes and Anti-Fat Attitudes). The partial $\eta^2 = .051$ indicates that approximately

5% of partial variance of the dependent variables is associated with the group factor.

Specifically, a statistically significant effect was found on Case Vignette 1, $F(3, 205) = 10.64, p = .001$. No statistically significant effects were found on Case Vignette 2, $F(3, 205) = 1.92, p = .167$, or on the AFA Scale, $F(3, 205) = .803, p = .371$.

Hypothesis 2

A series of MANCOVAs was used to examine age and gender as covariates, the attitudes of weight management as a dependent variable, and attitudes of dieters/nondieters as independent variables with respect to the dependent variable. The homogeneity of variance assumption was tested for all subscales. Based on a series of Levene's F tests, the homogeneity of variance assumption indicated that the error variance of the dependent variables was equal across all conditions (i.e., Dieting and Nondietering groups) for both vignettes (Case Vignette 1: $p = .439$; Case Vignette 2: $p = .477$) and the Anti-Fat Attitudes ($p = .524$). Furthermore, the Box's M value of 2.747 was associated with the p value of .848, interpreted as nonsignificant. Thus, the covariance matrices between the groups were assumed to be consistent for the purposes of the MANCOVA. Bartlett's test of sphericity ($p = .00$) indicated a sufficient correlation between the dependent variables (i.e., case vignettes). No statistically significant differences were found between dieters and nondieters and their judgment of weight management behaviors, $F(3, 205) = .587, p = .62$, Wilks's $\Lambda = .991$, partial $\eta^2 = .009$. Specifically, this nonsignificant F indicates that no significant differences exist among the Dieting and Nondietering populations on a linear combination of the two dependent variables (i.e., Case Vignettes and Anti-Fat Attitudes).

Chapter 5: Discussion

General Findings

The objective of this study was to determine if factors of judgment of unsuccessful weight management endorsement in the general population relative to a belief in either free will or determinism are identifiable. Furthermore, this study aimed to highlight attitudes surrounding moral responsibility and blame and how these accounts of human agency may impact an individual's judgment of his or her own weight management behaviors.

Most importantly, this study attempted to highlight a previously noncorrelated factor that may inhibit or prevent successful weight management strategies. Many factors were considered for inclusion in the study but were ultimately decided against. For example, experiences with bullying related to weight, cultural or personal beliefs of a standard of health, perception of attractiveness, and locus of control (i.e., external vs. internal) were all considered as variables of explanation of weight management. These variables were not included because of research already establishing correlations between them and successful or unsuccessful weight management attempts. Furthermore, this research assumed that some of these concepts could be linked to beliefs of free will and determinism. Thus, this study attempted to establish a foundation for the impact of others' free will and determinism and the correlation to one's own weight management behaviors.

A significant difference was found between participants who endorsed believing in either free will or determinism and their judgment of an individual's weight management strategies in given case vignettes. Participants who endorsed believing in

free will, on average, believed that both successful and unsuccessful weight management strategies were attributable to the participant in the case vignette. Conversely, participants who endorsed believing in determinism, on average, endorsed believing that factors surrounding successful or unsuccessful weight management were outside of the character's control. Furthermore, individuals who endorsed believing in free will had higher scores on the AFA Scale as compared to the scores of individuals who endorsed believing in determinism. These findings support the idea that believers in free will judge others who are obese more harshly than those who do not ascribe to believing in free will. These findings also suggest that believers in free will perceive other healthy-weight individuals as having good morals and also that others are responsible for their weight gain following unsuccessful weight management attempts (Murakami & Latner, 2015; Puddester & Wareham, 2013). Thus, the first hypothesis was supported. The first case vignette portrayed an actor who was successful in weight management attempts. In this vignette, a significant difference was noted between free-will and determinism groups, demonstrating that participants believed that the actor was responsible, exercised his own free will, and could have had a different outcome. Alternatively, in the second case vignette, when the actor was unsuccessful, no significant effects were found. This could imply that when others are successful in weight management strategies, the participants credit the agent with success and when others are not successful (in this case because of a medical condition) the agent is not at fault. The differences in these two case vignettes may reflect the participant population. That is, it was observed that after the study was distributed on a PCOM community listserv, many participants completed the survey. If this observation is accurate, this medical or medical type of population might have a

different view of unsuccessful attempts if a medical issue is present. Thus, future studies could aim to look at unsuccessful attempts void of medical issues in an actor's role.

Although the psychometrics for the AFA Scale were acceptable, some individuals may have considered the wording on some of the items to be strong, offensive, or not in line with their desired personal values. For instance, some of the items are "Fat people make me somewhat uncomfortable," "I have a hard time taking overweight people too seriously," "Although some overweight people must be intelligent, generally I think they tend not to be," and "I tend to think that people who are overweight are a little untrustworthy." Specifically, a large majority of individuals endorsed disagreeing with these items (i.e., a response of "Disagree Somewhat," "Disagree," "Strongly Disagree," or "Very Strongly Disagree"). The means and cumulative percentages for these items are presented in Table 3. Thus, specific emotional reactions to some of the questions, for some participants, may have conflicted with the way that some desire to see themselves versus what they may actually believe or would have endorsed on some items. Thus, demand characteristics may have impacted these items.

Table 3

Means and Percentages of Specific APA Items

	a [*]	b [#]	c [^]	d ^{**}
Mean	2.44	2.57	2.72	3.10
<i>SD</i>	1.5	1.73	1.81	2.04
Cumulative percentage of dislike items	90.0	84.8	83.4	73.5

a^{*} = I tend to think that people who are overweight are a little untrustworthy

b[#] = Although some overweight people must be intelligent, I generally think they do not tend to be

c[^] = I have a hard time taking overweight people too seriously

d^{**} = Fat people make me somewhat uncomfortable

Research has shown that dieters have held free-will beliefs while nondieters have held more deterministic beliefs (Ent & Baumeister, 2014). The second hypothesis aimed to test if differences existed in judgment of weight management strategies between dieters and nondieters. It was hypothesized that dieters would judge the weight management strategies of the characters in the weight management vignettes more harshly when compared to the nondieting population. According to the results in this study, this hypothesis was not supported, as no significant differences were found in the ratings between the two groups. The majority of individuals in this study reported that they were not dieting at the moment (dieters, $n = 47$; nondieters, $n = 164$). Thus, with a sample that represents dieters more congruently, dieters might judge the weight management behaviors of others more harshly. With regard to gender, 48 male

participants were placed in the free-will group while the remaining five were placed in the determinism group. Of female participants, 124 were in the free-will group while 34 were in the determinism group. These gender-specific responses reflect the overall population trend of free-will beliefs being more endorsed in comparison to deterministic beliefs.

Limitations of the Current Study

Internal and external validity issues and measurement issues limit the utility and generalizability of these findings. Internal threats include inter-rater reliability. Because the concepts of free will and determinism are considered to be variable across cultures, accurate reporting of beliefs is limited on the FAD-Plus. In addition, inconsistency is found among many demographic characteristics when considering these beliefs. Because the study was inclusive of the general population, the findings were difficult to compare to specific populations that struggle with weight management behaviors, such as populations with acquired brain injury who may experience cognitive impairments that make adapting coping strategies to recover from weight stigmatization difficult. Further studies should attempt to assess these beliefs in such populations.

With regard to the AFA Scale, although it was public domain, the scale's authors could not be contacted in regard to potentially changing the phrasing of a unit of measurement on one item (i.e., "One of the worst things that could happen to me would be if I gained 10 kgs."). For this reason, no changes were made as to preserve the public-domain version of the scale. Thus, not making this change could have possibly led to confusion among participants on their endorsement of this answer, as this study was

completed in a North American sample that uses both metric and imperial measurements (rather than the Australian version of this scale). Although this change in question format would have been a small, it could have impacted responses.

The case vignettes were adapted from a previous study in which vignettes were created and used for judgment in moral situations. Thus, the vignettes are not standardized to judgment of weight management behaviors and cannot be accurately generalized or analyzed for validity or reliability. Furthermore, obtaining a true rating of constructs, such as judgment from a contrived situation, is difficult. The case vignettes used in this study are believed to accurately portray weight management difficulties experienced by some. Owing to an array of factors that could impact one person's judgment of another's weight management attempts, standardization will likely remain difficult. That being said, the importance of such techniques should continue, as the purpose of similar research is to highlight accounts of human agency that can impact weight management judgments that have been previously unexplored. Thus, future attempts to illustrate weight management difficulties in the way of case vignettes should represent previously used measures in the absence of a specifically validated measure.

Free-will and determinism groupings in this study included additional explanations of human agency that were not specifically explored in this study. That is, the free-will group included randomness while the determinism group included both scientific and fatalistic determinism. Consequently, the free-will and determinism groups could both be misrepresented. Thus, examining the differences in these groups would be important, as doing so could further identify accounts of responsibility and how they may impact the judgments of goal-oriented behaviors of others.

These hypotheses do not take into account many other factors that may impact the findings, such as the raters' own religious/spiritual beliefs, locus of control (external vs. internal), gender, race, or socioeconomic status. Because accounts of human agency can be influenced by many factors, explaining every variable that impacts one's own understanding of free will or determinism can be cumbersome. This study accounted for only certain variables, such as overall beliefs in free will and determinism and current dieting status. Factors not accounted for in this study are important variables to consider and should be included in future studies linking free-will and determinism beliefs to judgment of others' weight management behaviors.

These hypotheses take into account dieting or nondieting behaviors; however, this study did not examine specific weight management behaviors or previously attempted strategies and did not examine participant's current body image or perceptions of their own health. This researcher believes that by knowing more information, such as previously employed dieting strategies or perception of one's own health, links could be made to understanding the judgment of others' weight management strategies. Although this is important to consider, the purpose of this study was to first establish a connection between free-will and determinism beliefs on judgment of others' weight management strategies in the hopes that future studies could explore in more detail specific weight management behaviors. Furthermore, the use of case vignettes that represent successful and failed attempts at these specific weight management strategies for comparison to free-will and deterministic beliefs would be useful.

Lastly, an additional limitation of the current study entails an error made in the qualitative descriptions of frequency of exercise in a given week, with the categories

overlapping with each other (e.g., 1-5, 5-10, 10+). This discrepancy could have created confusion among participants, unintentionally forcing them to choose a category that may have not accurately represented their true frequency of exercise in a week. Thus, this variable cannot be considered accurate. Additionally, this error in labeling was also considered when excluding this variable from exploratory analysis.

Implications of Findings

Weight management behaviors are difficult for a majority of the population. In addition, healthcare costs associated with weight loss are particularly high in the United States (CDC, 2015). Because of these situations, one must understand as many variables as possible to assist in the success of the individuals attempting to strive for a healthier lifestyle and to identify the factors that may decrease success. This study attempts to understand perceived moral responsibility, as it may impact a person's judgment of his or her own weight management behaviors. The supported hypothesis that endorsement of free-will beliefs over deterministic beliefs translated to stronger judgments of successful and unsuccessful weight management behaviors can inform possible treatment strategies for individuals struggling with consistent weight loss. Although self-assessments were not made in this study, self-assessments could apply to weight management behaviors (e.g., self-compassion, empathy, self-esteem). These treatment strategies can be aimed at reactions to one's own weight management endorsement that can be employed in such approaches as cognitive behavioral therapy (CBT) and dialectical behavior therapy. In addition, therapies such as these could help shape self-esteem, conscientiousness, and body dissatisfaction and reframe attitudes about oneself and others that may factor into successful weight management. This could highlight one variable that has not been

previously explored in the successful management of weight loss. This is paramount when attempting to treat individuals who encounter difficulty with weight management, as it further highlights external factors that could help to explain weight management problems. Thus, if individuals are impacted by others' views of their weight management behaviors, knowing how to cope with these external views can be included in treatment planning with a psychologist, such as would be done in a CBT program. Assuming that therapeutic modalities can "solve" or "fix" weight management behaviors by understanding one's ascriptions to free will and determinism would be inaccurate. Rather, the more accurate assumption would be to consider that one's own beliefs can be challenged in therapy. Such interventions as thought records and cognitive restructuring can be helpful in understanding the impact of others' beliefs about weight management strategies (Leahy, 2012).

Findings as Related to Future Work in the Area

Future studies in this area can attempt to generalize findings supported by the alternate hypotheses in this study to more specific populations. Individuals with acquired brain injury routinely experience weight gain secondary to medication programs as part of their treatment plan (Allison et al., 1999). By having a greater understanding of all of the factors that may impede successful weight management behaviors, such as moral responsibility and judgment, emotional factors, such as depression and anxiety related to appearance, can be improved.

Implications Related to Advocacy

Many mental-health problems are alleviated with medications; however, they may hinder successful weight management attempts (Allison et al., 1999). This study may raise awareness of moral responsibility and judgment connected to weight management behaviors that have not been previously explored. At times, medication management in some treatment settings is a higher priority than an individual's self-image and weight management. One such class of drugs, neuroleptics, or antipsychotics, treat psychotic symptoms secondary to brain injury; however, they have been noted to increase weight gain when prescribed (Allison et al., 1999). Particularly, in the population with acquired brain injury, for whom insight and moral responsibility are often compromised, weight gain secondary to medication regimen is a more common complaint (Bernstein, 1987). In addition, these problems can cause other health issues related to weight gain, such as depression and anxiety (Allison et al., 1999; Bernstein, 1987; CDC, 2015). Many individuals may decide that because of the combination of these factors they do not wish to adhere consistently to medication regimens, and in turn, the medications are not effective (Allison et al., 1999). By highlighting additional factors that lead to judgment of others' weight management behaviors (i.e., moral responsibility and the resulting judgment) and developing treatment plans specific to individuals who have compromised cognitive status, medication programs could be altered to include an individual's successful weight management. Furthermore, these attempts could alleviate other weight-related symptoms that these individuals may encounter, such as coping skills directly related to bullying and weight stigmatization.

Suggestions for Future Work

Many other correlates to successful weight management behaviors in the general population are not considered in this study. This study attempted to consider endorsements of free will and determinism with judgment of others' weight management behaviors to facilitate future work in this area. This connection may be important to consider when attempting to understand coping skills related to unsuccessful weight management behaviors and social stigmatization, as this connection has not been previously considered. Future work in this area should incorporate factors not assessed in this study, such as preexisting factors that may influence weight management attitudes, including the raters' own health and previous weight management behaviors, religious/spiritual beliefs, locus of control (external vs. internal), gender, race, or socioeconomic status.

This study did not explore beliefs in relation to differences in the frequency of exercise in a week as related to judgment of others' weight management behaviors. Future studies could examine additional variables and delineations among groups. The rationale for exploring additional variables and delineations could be relevant to possible differences between the amount of exercising done in a week and attitudes of free will. In other words, individuals who exercise more in a given week, or just exercise more overall, may regard others who do not exercise regularly as having less free will. Thus, they may also believe that others are more responsible for their weight management behaviors.

Levels of education were also not included as an exploratory variable in this study. This was not based on any specific rationale, and thus future studies could seek to explore whether level of education is related to harsher judgments of others' weight management strategies. The rationale for exploring levels of education could be relevant to possible differences in education levels and beliefs regarding the responsibility of others' behaviors. Specifically, individuals with a higher level of education could believe in attributions of human agency other than free will and, thus, could endorse alternative explanations of human behavior such as more specific delineations of determinism, locus of control, or pure fatalism as some examples. This study should be replicated to also consider education as a variable of interest potentially impacting attributional styles related to weight management behaviors.

A significant amount of research explores locus of control (external vs. internal) and its impact on goal-directed behavior. Attributions of free will and determinism have been researched less in this domain. For these reasons, locus of control was not considered as a variable in this study, as the goal of the study was to understand novel aspects with regard to weight management behaviors that could impact another individual's weight management attempts.

Conclusion

Future research must continue to examine novel variables that impact weight management behaviors because of the associated health risks and costs associated with obesity. Furthermore, many individuals employ many weight management strategies with little to no success or with premature endings. Understanding hitherto unexplored

variables can prove useful in identifying both protective and risk factors that may be associated with weight management behaviors. In addition, weight stigma and bullying are prevalent across many settings and have been found to specifically impact academic and vocational performance. Thus, because these factors have persisted and increased in complexity over time in the United States while dieting attempts and behaviors have also increased, explorations into weight management behaviors need to be examined.

Hopefully, this study is one of many that can explore novel variables to understand factors that impact successful weight management strategies and behaviors. An understanding of weight management behaviors is a complex endeavor that involves not only self and other-related perceptions of weight management, but also an appreciation of environmental and genetic factors. Furthermore, myriad psychological variables associated with weight management behaviors remain to be explored. Uncovering the many variables within each of these factors related to weight management may facilitate a greater understanding of weight management strategies while also informing treatment and coaching.

Lastly, one must understand what this study implies and what it does not. This study does not imply that an appreciation of the effects of beliefs in free will and/or determinism can solve issues related to obesity and weight management. Rather, the goal of this study was to understand one additional variable in the hope that it can be applied to existing approaches for treatment of weight management. Also, novel treatment approaches, with accounts of human agency relating to morality and responsibility, hopefully can be developed for weight management.. This study is not a debate on the morality of free will or determinism. However, it can add to the discussion of whether

beliefs in free will and determinism impact how others are judged, particularly with regard to weight management beliefs. This study is not an endorsement of free will or deterministic beliefs with regard to weight management. On the other hand, one must understand the impact of these beliefs on judgment. The larger implication of this study is that to continue to work with and treat issues in mental health, a change in the conceptualization of research is necessary. Novel approaches to issues, such as weight management, need to be explored through research to aid in and improve treatment outcomes. The fundamental hope is that the current study serves as an example to broaden the scope of variables considered when researching all areas of mental-health treatment, not just weight management.

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Appendix C
Case Vignettes

Instructions: Please answer all of the following questions. Use the scale corresponding to each question to answer the questions. You are asked to only consider the 3 questions following each case vignette and disregard previous vignettes or conditions while answering current items.

Condition #1

A) Lee, an elementary school teacher, has been attempting to lose weight for the past two years. Lee joined a fitness program last year, which included a nutritionist, and has been able to keep weight off for the past six months.

Q1: How much do you believe that Lee is responsible for the weight loss?

+ _____	+ _____	+ _____	+ _____	+
1	2	3	4	5
totally not responsible			totally responsible	

Q2: How much do you believe that Lee could have had a different outcome?

+ _____	+ _____	+ _____	+ _____	+
1	2	3	4	5
totally disagree			totally agree	

Q3: How much do you believe that Lee exercised free will?

+ _____	+ _____	+ _____	+ _____	+
1	2	3	4	5
totally did not exercise			totally exercised	

Condition #2

B) Lee, a physician diagnosed with hypothyroidism, has been attempting to lose weight for the past two years. Lee joined a fitness program last year, which included a nutritionist, but has not been able to keep weight off for the past six months.

Q1: How much do you believe that Lee is responsible for weight gain?

+	_____	+	_____	+	_____	+	_____	+	_____
1		2		3		4		5	
totally not responsible					totally responsible				

Q2: How much do you believe that Lee could have had a different outcome?

+	_____	+	_____	+	_____	+	_____	+	_____
1		2		3		4		5	
totally disagree					totally agree				

Q3: How much do you believe that Lee exercised free will?

+	_____	+	_____	+	_____	+	_____	+	_____
1		2		3		4		5	
totally did not exercise					totally exercised				

Appendix D

Demographic Questionnaire

Instructions: Please answer all of the following questions to the best of your ability.

Please do not leave any items blank.

1. What is your gender?

- a. Male
- b. Female

2. What is your age?

- a. 18-29
- b. 30-39
- c. 40-49
- d. 50+

3. What is your ethnicity?

- a. White, non-Hispanic
- b. African American or Black
- c. Hispanic
- d. Asian
- e. American Indian or Alaskan Native
- f. Native Hawaiian or Other Pacific Islander
- g. Other: _____

4. **Have you ever attempted a diet, either through professional assistance or self-maintained?**
 - a. Yes
 - b. No

5. **How many times have you attempted dieting?**
 - a. 0
 - b. 1-5
 - c. 5-10
 - d. 10+

6. **Are you currently dieting?**
 - a. Yes
 - b. No

7. **Have you ever been treated or are you currently diagnosed with any of the following: developmental disorder, eating disorder, past psychiatric hospitalization, traumatic or acquired brain injury, or neurological degenerative disorder?**
 - a. Yes
 - b. No

8. **How often do you typically exercise in a week?**
 - a. 0 times
 - b. 1-5 times
 - c. 5-10 times
 - d. 10+ times