

ABSTRACT

A Web-Based Weight Prejudice Intervention Targeting Individuals with Body Image Issues and Disordered Eating

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Disordered eating and body image issues may have consequences for how the individual views and treats others. Current theories on weight related prejudice hypothesize that internal stigma (a negative attitude toward oneself) may be projected as external prejudice (a negative attitude or discriminatory behaviors toward members of an out-group). As people with disordered eating and/or body image issues show high rates of internal stigma, they may be disposed to demonstrate high rates of external prejudice. Moreover, they may be less affected by an experimental manipulation that decreases antifat attitudes because internalized stigma and strong attitudes are more resistant to change. Participants (N=219) were randomly assigned to one of two conditions, a persuasion condition and a control condition. In the persuasion condition, subjects read a persuasive message concerning weight metabolism and genetics. In the control condition, subjects read about the role of psychological stress on mental illness. They then were presented with a series of scales to measure explicit and implicit weight-related prejudice and internalized weight stigma. Afterward, participants were asked to complete an assessment of disordered eating and body image issues. The results show correlations between internalized weight stigma, and explicit and implicit forms of weight prejudice. I discuss the limitations of a small sample size, resulting in an underpowered study. Further research is needed to determine if disordered eating and/or body image moderates the strength of weight prejudice interventions.

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A WEB-BASED WEIGHT PREJUDICE INTERVENTION TARGETING
INDIVIDUALS WITH BODY IMAGE ISSUES AND DISORDERED EATING

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CHAPTER ONE

Introduction

Disordered eating and body image issues are prevalent within society. Disordered eating can be defined as an unhealthy relationship with food, such as fasting, vomiting, bingeing, and restriction (Wu et al., 2019). Zeiler et al. (2015) found that 30.9% of girls and 14.6% of boys, ages 10-18, were at risk for eating disorders. These issues are also prevalent in college students, as 13.5% of women and 3.6% of men show signs of disordered eating (Eisenberg et al., 2011).

Along with the prevalence of disordered eating, there are high rates of body image issues. Body image issues, or body dissatisfaction, can be defined as negative perceptions and cognitions about one's body (Quittkat et al., 2019). Satghare et al. (2019) observed that 30.9% of psychiatric participants had body image dissatisfaction. Another study found that 71.4% of adolescent girls expressed dissatisfaction with their body (Pelegriani et al., 2014).

Disordered eating and body image issues have many negative outcomes for individuals who struggle with them (Voelker et al., 2015; Wu et al, 2019). A previous study found that dieting and unhealthy weight-control methods are predictive of eating disorders and obesity (Neumark-Sztainer et al., 2006). Researchers assessed adolescents' weight control behaviors at two separate points in time. Participants using unhealthy weight-control behaviors showed a higher body mass index, were at three times greater risk of being overweight, and were at increased risk of binge eating and

extreme weight-control behaviors (e.g., diet pills, laxatives, diuretics, and vomiting). Other studies found that eating problems persist throughout adulthood and play a significant role in the development of an offspring's eating disorder (Johnson et al., 2002). There is also research showing a correlation between disordered eating and mental health, including internalized weight bias, depression, anxiety, stress, low self-esteem, and suicidal ideation (Marshall et al., 2020; Voelker et al., 2015).

Like disordered eating, body image issues are predictive of negative outcomes. Researchers found body dissatisfaction to predict eating disorders and dysfunctional exercise (Rohde et al., 2014; Voelker et al., 2015). Body image issues are also correlated with internalized weight bias, low self-esteem, and psychological distress (Jung et al., 2017; Satghare et al., 2019; Shahyad et al., 2015). Jung et al. (2017) advocate for health care professionals to focus on weight stabilization and improving health conditions rather than focusing on weight loss. The researchers found that weight discrepancy between current and desired weight is higher in people who are female, young, attempt to lose weight, and with higher BMIs. The discrepancy is even more significant when participants reported internalized weight stigma and body dissatisfaction. Weight loss is not a realistic form of treatment when the effects of weight-stigma are considered. Based on these findings, we predict that disordered eating and body image issues will be positively correlated with internalized weight stigma and weight-related issues.

Previous research found that weight-related stigma is associated with overall poor quality of life (Phelan et al., 2015). Researchers measured implicit and explicit self-stigma using the Implicit Association Test (IAT) and Anti-fat Attitudes questionnaire.

Perceived stigma, internal stigma, and fear of becoming fat were associated with poor overall health, anxiety, depression, fatigue, self-esteem, body dissatisfaction, lack of social support, loneliness, and use of alcohol/drugs to cope with stress. Another study found that contact with overweight people is tied to attitudes towards others and relationships with one's body (Alperin et al., 2014). Self-reports of positive contact with overweight people decreased prejudice, while negative contact increased prejudice. For non-overweight participants, any contact was associated with body-checking behavior and fat talk. Body checking is repeated evaluation of one's whole or features of their body, including looking in the mirror, pinching their stomach, or seeing if their thighs touch (Lavender et al., 2013). Fat talk is negatively talking about one's body (Walker et al., 2017). For overweight participants, negative contact predicted body checking, while positive contact decreased drive for thinness. These findings indicate a direct association between internalized weight bias and weight prejudice.

Recent research has focused on predictors of weight bias and antifat attitudes. In a multinational survey, Puhl et al. (2015) found that national attitudes toward obesity predict stronger weight bias. Other predictors of weight bias include being male and not having contact with people who experience weight bias. Wu et al. (2021) asked young Chinese women to complete a survey of potential antifat attitudes predictors, including societal pressure and thin-ideal internalization, objectified body consciousness (i. e., body surveillance and body shame), broad conceptualization of beauty, and critical processing of media images. Researchers found that sociocultural pressure, thin-ideal internalization, and broad concepts of beauty predict anti-fat attitudes. Another survey report (Scott & Rosen, 2015) found that lower BMI, perceived weight, higher importance of weight,

endorsement of an entity mindset (i. e., belief that abilities are fixed), and identification as White predicted antifat attitudes. Several of these predictors, such as higher importance of weight, suggest that disordered eating is correlated with higher weight-related prejudice. Based on these findings, we predict that disordered eating is positively correlated with weight-related issues and implicit weight-related prejudice.

As people with disordered eating and/or body image issues show high rates of internal weight bias, they may be disposed to demonstrate high rates of external prejudice. For instance, Magallares et al. (2013) showed that women with eating disorders display higher rates of weight related prejudice toward others compared to a non-clinical sample. Magallares et al. (2013) predicted that eating disorder patients (anorexic, bulimic, and eating disorder not otherwise specified) would report more antifat attitudes than non-clinical patients, as influenced by the level of body dissatisfaction. The results found a correlation between body dissatisfaction and antifat attitudes. The researchers explain these findings according to the literature that people who internalize negative weight stereotypes are vulnerable to engaging in disordered eating. This suggests a bidirectional relationship between how people see themselves (body image) and attitudes toward obese people (antifat attitudes). Although the researchers were investigating how people with eating disorders, who display body dissatisfaction, see people with weight problems (e.g., obese people), the two groups are not mutually exclusive. For example, obese people may display disordered eating. In fact, the most common eating disorder is binge eating disorder, where individuals are often overweight. Despite these limitations, the conclusions drawn in the study leads us to

hypothesize that internalized weight stigma is a mediator between disordered eating and body image issues and prejudice.

Although much of the research on anti-fat prejudice is correlational, some research has looked at variables that can causally affect anti-fat prejudice. For instance, Crandall (1994) provided one example of a manipulation designed to affect anti-fat attitudes. He observed the association between values, beliefs, and the rejection of fat people as a stigmatized group. The rationale behind his study was to extend racial prejudice theory and methods to fat prejudice research. For instance, racial prejudice studies often manipulate racial attitudes to observe changes in behavior. In Study 4, Crandall sought to change beliefs about the causes of obesity to gather evidence that underlying values precede antifat attitudes. Crandall manipulated antifat attitudes by asking participants to read a persuasion article. Subjects were persuaded that fatness was a result of genetics and physiology. Antifat attitudes were measured using the Antifat Attitudes Scale. After the manipulation, participants scored lower on beliefs about weight controllability (labeled as Willpower) and dislike of fat people (Dislike).

Teachman et al. (2013) observed that pre-existing attitudes determine the effectiveness of an antifat attitudes manipulation by comparing people with stronger initial antifat attitudes to people with weaker initial antifat attitudes. Researchers demonstrated that participants had strong implicit anti-fat attitudes (stereotyping overweight individuals as “lazy” or “lacking willpower”), even when no explicit anti-fat attitudes were shown. When participants were informed that obesity is caused by overeating and lack of exercise, higher implicit anti-fat attitudes were shown. When participants were informed that obesity is genetic, they did not demonstrate a lower

implicit bias. These findings suggest people with stronger initial antifat attitudes are more resistant to change. We predict that people with higher levels of disordered eating and body image issues will be less sensitive to an antifat manipulation.

Disordered eating and body image issues might be additional variables that might influence the effectiveness of weight-related persuasive articles. Those with weight disordered eating/body image issues may be less affected by a persuasive article that decreases antifat attitudes because internalized weight bias and strong attitudes are more resistant to change (Krosnick & Petty, 1995). To measure this, I will use an experimental manipulation based on Crandall's (1994) study. I expect that participants who read the persuasion article will show less weight-related prejudice. However, I also predict that the relationship between the persuasion article and weight-related prejudice will be moderated by disordered eating and body image issues, and internalized weight stigma. Participants who have higher scores on disordered eating and internalized weight stigma and lower scores on body esteem scale (indicating body image issues) will be less affected by the persuasion article. Furthermore, I aim to replicate the relationship between internalized weight bias, and explicit forms of weight prejudice. My research expands on Crandall's (1994) study in several ways. First, it assesses disordered eating and body image issues as moderators of the effects of the persuasive article on weight prejudice. Second, it includes the Weight-IAT to measure implicit weight prejudice.

Some additional purposes of the study are to further explore the relationship that disgust, and Protestant work ethic have with anti-fat attitudes and body-image/eating disorders. O'Brien et al. (2013) showed that disgust partially mediated relationships between physical appearance concerns (fear of fat, body image disturbance) and anti-fat

prejudice, but the relationship was only found in women. As Crandall (1994) demonstrated, antifat attitudes can be manipulated using a persuasion article. Based on these findings, we predict that participants who read the persuasion article will show lower levels of disgust. Crandall (1994) also found that anti-fat prejudice was linked to belief in the Protestant Ethic. The results were later replicated by Carles et al. (2009). Researchers found that greater weight stigma was associated with greater Protestant work ethic. According to these findings, we predict that participants who have higher scores on the Protestant Work Ethic Scale will show higher rates of weight-related prejudice. All hypotheses were pre-registered and can be found here: <https://osf.io/sve6x>.

Main research hypotheses

- H1: Disordered eating and body image issues will be positively correlated with internalized weight stigma, weight-related issues, and implicit weight-related prejudice.
- H2: Disordered eating will be positively correlated with body image issues.
- H3: Internalized weight stigma will mediate the relationship between disordered eating and body image issues and prejudice.
- H4: Weight prejudice will be lower in participants who read the persuasion article compared to participants who read the control article.
- H5: The relationship between the persuasion article and weight-related prejudice will be moderated by disordered eating and body image issues, and internalized weight stigma. The persuasion article will have a weaker effect on those with disordered eating, body image issues, and internalized weight stigma.

Ancillary Research Hypothesis

H6: Participants who have higher scores on the Protestant Work Ethic Scale will show higher rates of weight-related prejudice.

H7: Participants who read the persuasion article will show lower levels of disgust.

CHAPTER TWO

Method

Participants

We had planned to recruit 489 undergraduate students ages 18 and older from a psychology subject pool at a private religious university in the southwestern United States. Assuming the effect size is small to medium ($f^2 = .15$), we would have had 80% power with 489 participants. Due to time limitations, a sample of 333 participants were collected. 114 participants' data was excluded from analyses because of failure to complete the survey. Thus, there was a total of 219 participants (143 women, 75 men, 1 other, $M_{age} = 19$ years, $SD = 1.20$ years, range: 18-24 years). This sample size achieved power ($1 - \beta$) of .46. Participants were given course credit or extra credit for their participation. For ethnicity, 61% identified themselves as Caucasian, 17% as Asian, 12% as Hispanic, 7% as African American, and 3% as "other". We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the study.

Measures

The procedure used an online questionnaire to collect the data via Qualtrics <https://osf.io/sve6x>. Upon opening the survey, participants read through the informed consent. Participants then selected whether they wanted to participate in the research study. The study contained two parts: first, a manipulation, then a series of measured variables detailed below. Participants were randomly assigned to either the experimental or control condition.

Manipulation. Participants were asked to read a randomly assigned persuasion article or control article. The two articles were based on Crandall's (1994) study. Subjects in the persuade condition (n = 110) read a one-page persuasive paper concerning weight metabolism and genetics (Appendix: Persuasion Article). The paper discussed genetic influence on weight, referencing a twin study, the genetic component of obesity, and the negative effects of dieting. Subjects in the control condition (n = 109) read a one-page message concerning the role of stress on mental illness (Appendix: Control Article). The article followed a similar structure to the persuasion paper in its psychobiological content, length, emphasis on human and animal studies, and complexity of subjects. The main distinction was it did not refer to weight.

Body Image Issues.

Body Self Esteem Scale: Franzoi and Shields' (1984) body self-esteem scale was used to assess body image. Participants were asked to "[p]lease read each item and indicate how you feel about this part or function of your own body using the following scale" (sample item, "appetite"). Items were scored using a 5-point Likert-type scale ranging from *strong negative feelings* to *strong positive feelings*, $\alpha = .96$. Low scores indicate body image issues. I am predicting a negative relationship between body image scores and prejudice.

Disordered Eating.

Eating Disorder Examination Questionnaire: Disordered eating was measured using the 28-item Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 2008). Participants responded on a 1 (*no days; none of these times; not at all*) to 6 (*every day; every time; markedly*) Likert-type scale (sample item, “Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?”; $\alpha = .97$)

Eating Disorder Beliefs: A modified version of factor 1 from the Eating Disorder Beliefs questionnaire (Rose et al., 2006) was used as a final assessment of disordered eating. The questionnaire was modified to include a measure of acceptance by others (factor 1; sample item, “If a person’s thighs are firm it means they are a better person”) and acceptance of self (based on language from factor 1; sample item, “If my thighs are firm it means I’m a better person; If my hips are narrow it means I’m successful”). Participants responded on a 1 (*strongly disagree*) to 6 (*strongly agree*) 14-item Likert-type scale. The Eating Disorder Examination Questionnaire usually contains a 7-point Likert Scale but was misentered as a 6-point Likert Scale, $\alpha = .91$.

Prejudice Measures.

Antifat Attitudes Questionnaire: Explicit weight-related prejudice was measured with the 13-item Antifat Attitudes Questionnaire (Crandall, 1994). This measures three factors concerning the extent to which people 1) dislike those who are fat, 2) fear being fat, and 3) belief that being fat is a matter of willpower. This scale was on a 1

(*strongly disagree*) to 9 (*strongly agree*) Likert-type scale (sample item, “I don’t really like fat people much”; $\alpha = .87$).

The Goldfarb Fear of Fat Scale: Participants completed a measure of fear of fat. Goldfarb et al. (1985) 10-item Fear of Fat Scale measures an individual’s fear of fatness on a 4-point Likert-type scale ranging from 1 (*very untrue*) to 4 (*very true*; sample item, “My biggest fear is of becoming fat”; $\alpha = .91$).

Weight Implicit Association Test: The Weight Implicit Association Test (Project Implicit, 2011) measures implicit bias toward weight and constructs of “fat people” compared to “thin people” and the attitudes of “good” and “bad”, $\alpha = .84$. The measure shows a silhouette image of “fat people” and “thin people” (Figure 1). Participants are asked to rapidly pair images of people with words as they appear on screen (Sabin et al., 2015). Code from *iatgen* was embedded in the Qualtrics IAT (Carpenter et al., 2019).

Internalized Stigma.

Modified Weight Bias Internalization Scale: Internalized weight stigma was measured using the 11-item Weight Bias Internalization Scale (WBIS; Ciupitu-Plath et al., 2018; $\alpha = .93$). Obesity language was modified to fit a more weight-diverse sample (e. g. “As an overweight person, I feel that I am just as competent as anyone” was modified to “Because of my weight, I feel that I am just as competent as anyone”). Participants responded on a 1 (*strongly disagree*) to 7 (*strongly agree*) Likert-type scale.

Other Individual Measures.

The Discrete Emotions Questionnaire: Participants completed the 32-item Discrete Emotions Questionnaire (Harmon-Jones et al., 2016). Participants

were instructed, “While reading the article, what extent did you experience these emotions?” Sample emotions include *disgust*; $\alpha = .95$. This scale was on a Likert-type scale ranging from 1 (*not at all*) to 7 (*an extreme amount*).

Protestant Work Ethic: Mirels and Garrett’s (1971) 19-item Protestant Work Ethic scale was used to assess values of labor and discipline (sample item, “Most people spend too much time in unprofitable amusements”; $\alpha = .89$). The test uses a 5-point Likert-type scale ranging from *strongly disagree* to *strongly agree*.

Procedure

Upon opening the survey, participants were asked to read through the informed consent form. After reading through the consent form, participants indicated whether they consented to participate in the research study. Participants were asked to read a short article. Participants in the Persuasion group read a persuasive article concerning weight metabolism and genetics. Participants in the Control group read a message concerning the role of psychological stress on mental illness. Participants were presented with the measured variables outlined above. Participants completed the entirety of the study on the computer. All materials were presented via Qualtrics. Completion of the entire survey took less than 60 minutes.

Upon completion of the Qualtrics survey, participants were asked to write about their best day to erase any negative affect that arose from answering questions about their body image. Then, they answered funnel debrief questions about the study. Because we were asking participants about their beliefs about eating disorders, we also

provided students with information about the Baylor counseling center in case they wanted to talk to a professional about eating disorder related issues. Afterward, they read an explanation screen, which explained the full scope of the study and outlined study hypotheses.

CHAPTER THREE

Results

H1: Disordered eating and body image issues will be positively correlated with internalized weight stigma, weight-related issues, and implicit weight-related prejudice.

Correlations were used to determine if disordered eating and body image issues were related to internalized weight stigma, externalized weight stigma, and implicit weight-related prejudice. As seen in Table 1, disordered eating had a strong positive association with internalized weight stigma and a strong positive association with externalized weight stigma. A nonsignificant negative association was found between disordered eating and implicit weight-related prejudice.

Variable	<i>M</i>	<i>SD</i>	Range	1	2	3	4	5
1 EDEQ	2.77	1.42	1-6					
2 BES	3.25	.73	1-5	-.52*				
3 WBIS	2.99	1.27	1-7	.71*	-.57*			
4 GFFS	1.89	.73	1-4	.70*	-.40*	.68*		
5 Weight IAT	.46	.36	N/A	-.05	.13	-.17*	-.03	

Note. * indicates $p < .05$. EDEQ = Eating Disorder Examination Questionnaire. BES = Body Esteem Scale. WBIS = Weight Bias Internalization Scale. GFFS = Goldfarb Fear of Fat Scale (Externalized Weight Stigma Measure). Weight IAT = Weight Implicit Attitudes Test.

Table 1

Body image had a moderate negative association with internalized weight stigma, and a positive but nonsignificant association with implicit weight-related prejudice. This shows that lower body image was related to increased internalized weight stigma, and

slightly decreased implicit weight prejudice. A significant negative relationship was found between body image and externalized weight stigma, $r = -.4$, $p = .63$. These results indicate that lower body image was associated with increased externalized weight stigma.

These results show that disordered eating is positively correlated with internalized weight stigma and externalized weight stigma, while body image issues are positively correlated with internalized weight stigma and negatively correlated with implicit weight-related prejudice.

H2: Disordered eating will be correlated with increased body image issues.

Correlation was used to determine if disordered eating was correlated with body image issues (Table 1). Disordered eating had a moderate negative association with body image. Low scores on the body image measure indicated increased body image issues. This finding supports Hypothesis 2, which states that disordered eating will be positively correlated with body image issues.

H3: Internalized weight stigma will mediate the relationship between disordered eating and body image issues and prejudice.

The Hayes-Process model was used to determine if internalized weight stigma mediates the relationship between disordered eating and body image issues and weight-prejudice. As seen in Figure 1, a nonsignificant direct effect was found between disordered eating and implicit prejudice. A significant indirect effect was found between disordered eating and implicit prejudice, $-.05$, 95% CI $[-.08, -.01]$, indicating full mediation. A significant direct effect, $.22$, 95% CI $[.16, .29]$, and a significant indirect

effect, .13, 95% CI [.06, .20], was found between disordered eating and explicit prejudice.

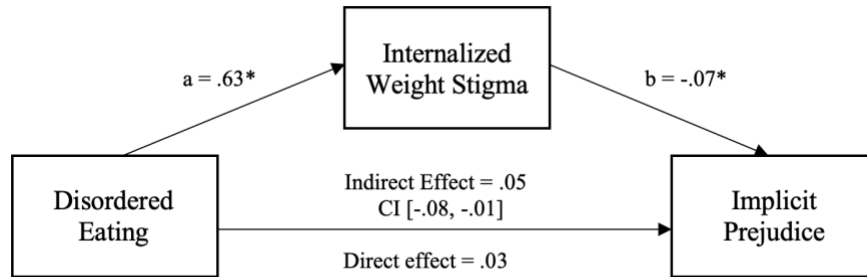


Figure 1

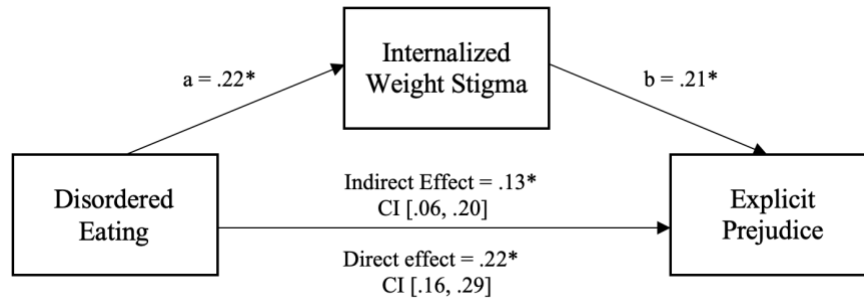


Figure 2

A nonsignificant direct effect, .02, and nonsignificant indirect effect, .04, was found between body image and implicit prejudice. A nonsignificant direct effect, -.02, and a significant indirect effect, -.38, 95% CI [-.49, -.28], was found between body image and explicit prejudice.

H4: Weight prejudice will be significantly different between participants who read the persuasion article compared to participants who read the control article.

A *t*-test was conducted to test for differences between the persuasion article and the control article. As seen in Table 2, a nonsignificant effect was found between the persuasion article and explicit prejudice, and a significant effect was found between the persuasion article and implicit prejudice. These findings show weight prejudice to be significantly smaller in participants who read the persuasion article compared to participants who read the control article.

Variable	Persuasion	Control	<i>t</i> -test	<i>df</i>	<i>p</i>
	<i>M</i>	<i>M</i>			
Explicit	2.85	3.13	-1.61	217	.11
Implicit	.51	.40	2.20	217	.03*

Note. * indicates $p < .05$

Table 2

H5: The relationship between the persuasion article and weight-related prejudice will be moderated by disordered eating and body image issues, and internalized weight stigma.

The Hayes-Process model was used to assess if the relationship between the persuasion article and weight-related prejudice was moderated by disordered eating and body image issues, and internalized weight stigma. A nonsignificant effect was found between disordered eating and implicit prejudice, $F(1.76, 215), p = .16, R^2 = .0005$. A nonsignificant effect was found between disordered eating and explicit prejudice, $F(.01, 215), p = .92, R^2 = 0$.

A nonsignificant effect was found between body image and implicit prejudice, $F(.31, 215), p = .58, R^2 = .001$. A nonsignificant effect was found between body image and explicit prejudice, $F(1.87, 215), p = .17, R^2 = .007$.

These findings indicate that the persuasion article and weight-related prejudice were not moderated by disordered eating and body image issues, and internalized weight stigma.

H6: Participants who have higher scores on the Protestant Work Ethic Scale will show higher rates of weight-related prejudice.

Regression was used to measure if participants who have higher scores on the Protestant Work Ethic Scale showed higher rates of weight-related prejudice. A nonsignificant difference was found, $F(1.30, 165), p = .11, R^2 = .30$. These results show that the participants who have higher scores on the Protestant Work Ethic Scale do not have higher rates of weight-related prejudice.

H7: Participants who read the persuasion article will show lower levels of disgust.

A *t*-test was used to test for differences between the levels of disgust in the persuasion article group and the control article group. A nonsignificant difference was found, $t = -1.91, df = 217, p = .05$. These findings indicate that participants who read the persuasion article did not show lower levels of disgust.

Exploratory analyses

Because previous research has shown gender differences in body image issues and eating disorders (Forrester-Knauss and Stutz, 2012), a *t*-test was conducted to test for gender differences. As seen in Table 3, a significant effect was found for disordered eating, body image, weight bias internalization, and fear of fat. A nonsignificant effect was found between gender and implicit weight prejudice. No significant difference was found between gender and the persuasion article. These findings show that women

struggle with disordered eating, body image issues, and weight prejudice more than men. Further research is needed to draw conclusions on gender mediating the effects of a persuasion article manipulation.

t-test Gender Differences

Variable	<i>M</i> _{men}	<i>M</i> _{women}	<i>t</i> -test	<i>p</i>
1 EDEQ	2.18	3.09	-4.66	<.001*
2 BES	3.50	3.12	3.75	<.001*
3 WBIS	2.7	3.17	-2.61	.01*
4 GFFS	1.67	2.01	-3.36*	.001*
5 Weight IAT	.48	.45	.66	.51
6 Persuasion Article	.55	.48	.95	.34

Note. * indicates $p < .05$

Table 3

CHAPTER FOUR

Discussion

General Discussion

This research supports previous findings that disordered eating and body image are positively correlated with weight prejudice. Specifically, the results show that disordered eating is positively correlated with internalized and externalized weight stigma. Body image was found to be correlated with internalized weight stigma and implicit weight-related prejudice. Disordered eating had a moderate correlation with body image issues. Internalized weight stigma was found to mediate the relationship between disordered eating and body image issues and explicit weight prejudice. These results are concurrent with the previous literature (Alperin et al., 2014; Jung et al., 2017; Lavender et al., 2013; Rohde et al., 2014; Satghare et al., 2019; Shahyad et al., 2015; Voelker et al., 2015). No mediation effect was found for implicit weight prejudice.

Small or no correlations between the implicit and explicit measures of weight prejudice is not uncommon. In a meta-analysis, Hofmann et al. (2005) concluded that implicit and explicit measures are generally related but can be scored as nonsignificant due to higher order inferences and lack of conceptual correspondence. Nosek (2005) shared these findings. The study found that implicit and explicit measures are related but may provide conflicting reports due to the individual's self-presentation, the strength of the evaluations, the dimensionality, and the distinctiveness of the content between evaluations. The differences between implicit prejudice, and explicit prejudice may have been due to social desirability bias.

The study expands on the research by adding a manipulation to decrease weight prejudice. Those who read the persuasion article showed significantly less weight prejudice compared to participants who read the control article. These findings are supported by other weight prejudice interventions. Crandall (1994) showed that a persuasion article manipulation lowered participants beliefs about weight controllability and dislike of fat people. Ciao and Latner (2011) found interventions that address cognitive dissonance (antifat attitudes v. body positivity) are successful. Hague and White (2005) demonstrated web-based educational interventions that challenge fat stigma are also effective at reducing weight prejudice.

Contrary to Hypotheses 5, internalized weight-stigma, resulting from disordered eating and body image issues, did not moderate the relationship between the persuasion article and weight-related prejudice. Because most research on anti-fat attitudes has been correlational, this hypothesis had little research to support it. However, the results may have been nonsignificant due to the small sample size. Future studies with larger sample sizes need to be conducted before firm conclusions can be drawn.

Similarly, Hypotheses 6 was not supported. Participants with higher scores on the Protestant Work Ethic Scale did not show significantly higher rates of weight-related prejudice.

Also, Hypothesis 7 was not supported. The lack of significant difference could be because of a small sample size, as previous research has been in support of similar predictions. For instance, O'Brien et al. (2013) showed that disgust partially mediated relationships between physical appearance concerns (fear of fat, body image disturbance) and anti-fat prejudice for women.

Lastly, no significant difference was found in levels of disgust between participants who read the different persuasion articles. This prediction was based on a study by Crandall (1994), which demonstrated that antifat attitudes can be manipulated using a persuasion article. Further research with a larger sample size is needed to reassess this prediction.

Limitations and Future Research

There were several limitations to this study. Power analyses suggested that we required a sample size of 489 participants to detect a small effect. Due to time limitations and data exclusion, only 219 participants were sampled, reducing the power. There was also a Qualtrics scoring error. The Eating Disorder Examination Questionnaire contains a 7-point Likert Scale, which was entered as a 6-point Likert Scale. Another limitation is the study had several cross-sectional components, specifically the weight-prejudice measures and body image and disordered eating measures used after the manipulation. For instance, hypothesis 2, regarding the relationship between body image and disordered eating, was correlational. Thus, not all the results can provide causal conclusions. Future research should seek to implement experimental methods to address causality issues. For instance, body image could be manipulated using an intervention. Another approach to addressing causality issues could be implementing a longitudinal study. Lastly, the data made use of self-report measures, which introduces the confound of social desirability. Social desirability is relevant to prejudice research as participants may underreport socially undesirable attitudes (such as prejudice) and overreport more desirable attributes (Latkin et al., 2017). The present study took this into account by conducting an IAT, which has been shown to detect more implicit levels of prejudice and

shows no evidence of social desirability bias (Hague & White 2005; Sabin et al., 2015, Wüthrich & Lozano, 2018). Furthermore, participants are less likely to show social desirability bias when expressing anti-fat attitudes (Crandall, 1994).

Future research with larger sample sizes should continue to investigate if disordered eating and body image issues moderate effects on weight prejudice interventions. A successful model for the intervention could be the longitudinal web-based intervention conducted by Hague and White (2005). The researchers found negative attitudes decreased in treatment groups. Like the persuasion article used in this study, the intervention included factors related to obesity and implications of weight loss efforts. It also had classroom activities. Future research could expand on this intervention by assessing if disordered eating and body image issues moderate the effects of interventions such as these. Research should also measure participant BMI as a potential moderator for weight prejudice. Scott and Rosen (2015) found that lower BMI predicts higher antifat attitudes.

Conclusion

In this study, I examined the relationship between body image and disordered eating and weight prejudice. Although the findings are inconclusive, they show that how we feel about ourselves can influence how we perceive others, specifically in the context of body image. Educational interventions, such as the persuasion article provided in this study, can change how people perceive themselves and others. This can lead to positive social change, such as promoting body positivity.

APPENDIX

Articles

Is Obesity Under Our Control?

— HEALTHCARE | Issued on: March 30, 2020



Research has shown that weight metabolism and genetics are determinants of the predisposition to gain body mass over time and become obese. This is evident in twin studies, animal studies, genetic studies, and setpoint theory research.

Bouchard and Tremblay (1997) researched the **genetic influences on the response of body fat and fat distribution** to susceptibility to chronic overfeeding in twins. The researchers conducted the study on pairs of young adult male identical twins. They found that twins are significantly more alike than individuals who are not genetically related, in relation to changes in body mass, body composition, subcutaneous fat distribution and abdominal visceral fat.

Animal and human studies have demonstrated the genetic component of obesity. Studies have shown that animals with a defect in the leptin-signaling pathway in the hypothalamus of the brain develop a morbidly obese phenotype. As leptin controls hunger cues, a defect in leptin-signaling pathways correlates with behaviors of overeating. Similar findings have been shown in human studies. The genome-wide associations studies showed a genetic component behind obesity. These studies found more than fifty genes associated with obesity, including the *MC4R* gene that is linked to consistent overeating.

Other research has shown the **negative effects of dieting on metabolism.** Farias and Rodriguez (2010) discuss how the body is more efficient protecting against weight loss during calorie deprivation compared to conditions of weight gain. This is explained by setpoint theory, where the body weight is maintained at a stable range, despite the variability in calorie intake and expenditure.

Based on the current research, **obesity may not be under someone's control.** Weight metabolism and genetics are factors that influence weight gain.

Is Mental Health Under Our Control?

— HEALTHCARE | Issued on: March 30, 2020



Research has shown that **stressors play a major role in mental illness**. This has been demonstrated through the effects of childhood stress in human studies, and the effects of inducing anxiety-like states in animal studies.

To describe just a few examples, Schneiderman et al. (2008) discuss the role of childhood stress in mental illness. The most widely studied stressors in children and adolescents are exposure to violence, abuse, and divorce/marital conflict. Psychological effects of abuse include the dysregulation of affect, provocative behaviors, the avoidance of intimacy, and disturbances in attachment. Overall, **people who experience childhood stress have higher levels of major psychological disturbances**.

Razzoli et al. (2006) demonstrated the effects of stressors on rats, inducing an anxiety-like state. In the experiment, rats were subjected to threat during three daily encounters, in order to condition anxiety. The rats either defeated the intruders or were threatened by residents. On Day 4, the rats were relocated to a different context. The rats that failed to defeat the intruders showed anxiety-like behaviors, such as increased risk assessment and decreased exploring. Furthermore, they exhibited enhanced corticosterone and decreased testosterone. The data demonstrates that the introduction of an anxiety-like state in rats is influenced by social factors. Overall, the study demonstrates that **neurobiological mechanisms, such as stress, may underlie anxiety-related disorders**.

Based on the current research, **mental illness susceptibility may not be in someone's control**. Childhood stressors and anxiety-induced states are correlated with increased susceptibility to psychopathologies.

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