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## Weight Stigma, Cognitions, and Disordered Eating

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WEIGHT STIGMA, COGNITIONS, AND DISORDERED EATING

By

SARAH EVELYN PELFREY, Bachelor of Science

Presented to the faculty of the Graduate School of

Stephen F. Austin State University

In Partial Fulfillment

of the Requirements

For the Degree of

Master of Arts in Psychology

STEPHEN F. AUSTIN STATE UNIVERSITY

August 2017

WEIGHT STIGMA, COGNITIONS, AND DISORDERED EATING

By

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## ABSTRACT

Weight stigma experiences affect people of all weights and have many negative consequences; despite this, weight stigma is still an acceptable prejudice in our society. Research has established that weight stigma is predictive of disordered eating (DE) cognitions, which are, in turn, predictive of DE behaviors. The current study explored the unique contribution DE cognitions make to DE behaviors while controlling for other DE cognitions. The DE cognitions examined in the current study were drive for thinness, weight bias internalization, and perfectionism. The DE behaviors examined were emotional eating, restrained eating, inappropriate compensatory behaviors, and binge-eating. Weight bias internalization and drive for thinness were the only DE cognitions found to make unique contributions to distinct DE behaviors. The DE cognitions were further found to be significant mediators of the relation between weight stigma experiences and the related DE behaviors. Implications with respect to prevention and treatment are discussed.

*Keywords:* Eating disorder, cognition, weight stigma, mediation

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## WEIGHT STIGMA, COGNITIONS, AND DISORDERED EATING

Weight stigma experiences (WSE) occur when people experience prejudice, discrimination, or negative stereotyping because of their weight. A large body of survey-based research has established WSE as pervasive social problems that impact a variety of people in our society. Higher risk of depression, anxiety, low self-esteem, disordered eating, increased risk of mortality, and suicidal ideation have all been linked to WSE (Neumark-Sztainer et al., 2002; Pearl, Puhl, & Brownell, 2012; Sutin, Stephan, & Terracciano, 2015). While frequency of WSE are positively associated with weight, WSE impact overweight and non-overweight people alike (O'Brien et al., 2016; Puhl & Luedicke, 2012). It is imperative that researchers continue to explore the relation between WSE and psychological well-being in order to educate both clinicians and the public on the detrimental effects of WSE.

Research has consistently shown that very overweight individuals are at an increased risk of exposure to WSE; however, WSE, such as teasing or discrimination, are not exclusive to overweight or obese people (Neumark-Sztainer et al., 2002; Puhl & Heuer, 2009). There is a lack of research focusing on the impact of WSE for non-overweight individuals. Because of this, the majority of research available concerning WSE and average or underweight individuals uses child and adolescent samples. Underweight adolescents report similar levels of teasing concerning their weight as do

overweight adolescents (Neumark-Sztainer et al., 2002). Even children display negative judgements about a person based on weight, whether that person is underweight or overweight (Cramer & Steinwert, 1998). Of adolescents who reported WSE, 65% were average weight, providing further evidence that WSE are not exclusive to overweight people (Puhl & Luedicke, 2012). Exposure to WSE may place social pressures upon individuals, which may precipitate pressure to conform to an unhealthy or difficult to achieve body weight.

### Eating Disorder Pathology

Research by Neumark-Sztainer et al. (2002) has specifically implicated WSE in unhealthy weight control behaviors and binge-eating behaviors. Unhealthy weight control behaviors and binge-eating are key criteria of eating disorders (American Psychiatric Association [APA], 2013). Eating disorders are characterized by persistent disturbances in eating and eating-related behaviors that significantly impair physical health or social functioning (APA, 2013). The three specified eating disorders in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* are anorexia nervosa, bulimia nervosa, and binge eating disorder (APA, 2013). These eating disorders are characterized by specific disordered eating (DE) behaviors, such as excessive intake of food in one sitting— as with binge eating disorder and bulimia nervosa— and restriction of food intake— as with anorexia nervosa.

Cognitive-behavioral psychologists have sought to understand the DE behaviors associated with eating disorders by researching the DE cognitions that occur. Disordered

eating cognitions are persistent, dysfunctional thoughts, usually pertaining to weight, eating, appearance, and acceptance, that maintain eating disorder pathologies (Cooper, 2006). The model argues that the over-evaluation of eating, shape, and weight is the core mechanism involved in the maintenance of eating disorder pathology (Fairburn, Cooper, & Shafran, 2003). The cognitive-behavioral model of eating disorders posits that an individual tends to have dysfunctional thoughts about themselves and engages in maladaptive behaviors, which may include unhealthy eating, to quell those thoughts (Fairburn et al., 2003). Cognitive-behavioral treatment methods of eating disorders include targeting DE cognitions in order to change behaviors. Eating disorder treatments which targeted DE behaviors alone led to increased risk of eating disorder relapse, as compared to treatment of DE cognitions in conjunction with DE behaviors, further emphasizing the importance of DE cognitions in the treatment of eating disorders (Fairburn et al., 2003). Research into the DE cognitions related to distinct DE behaviors would potentially aid in expanding and tailoring treatment methods to be more specific to each client.

### Weight Stigma Experiences and Eating Disorders

Research has recently linked WSE to DE cognitions. Using a mediational pathway, Benas and Gibb (2008) studied verbal victimization, both general and weight-related, as predictors and DE and depressive cognitions as mediators. Overall, the relation between DE cognitions and weight-related victimization was stronger than the relation between DE cognitions and general victimization; further, DE cognitions strengthened

the relation between weight-related verbal victimization and DE behaviors, as compared to depressive cognitions. The study provided evidence that WSE specifically make an individual more likely to exhibit DE cognitions over other dysfunctional cognitions. O'Brien and colleagues (2016) examined a specific DE cognition, weight bias internalization, and its relation to WSE. Results indicated that WSE are associated with greater weight bias internalization. Further exploration and replication of these findings are needed in order to better understand the potential relation of WSE to specific DE cognitions.

There are numerous studies linking WSE to various DE behaviors. In research using college-aged participants, weight stigma has been linked to greater emotional eating and uncontrolled eating, behaviors which are characteristic of bulimia nervosa and binge eating disorder; WSE have also been shown to play a significant role in predicting binge-eating behaviors (Almeida, Savoy, & Boxer, 2011; O'Brien et al., 2016). When teased about their weight, adolescents exhibited higher scores on the bulimia subscale of the Eating Disorder Inventory (Keery, Boutelle, van den Berg, & Thompson, 2005). While these links are more prominent in bulimia nervosa and binge eating disorder, they are present in anorexia nervosa, as well. One study revealed that hurtful weight-related comments from parents have been shown to contribute to anorexia nervosa behaviors, such as fasting, eating very little food, or using a food substitute (Eisenberg, Berge, Fulkerson, & Neumark-Sztainer, 2012).

### Unaddressed Issues in the Current Literature

There is an established relation between DE cognitions and DE behaviors. O'Brien and colleagues (2016) observed that weight bias internalization, a DE cognition, was positively associated with the DE behaviors of emotional eating and uncontrolled eating. Research has also found a significant correlation between DE cognitions— fear of gaining weight, the importance of being thin to be socially accepted, and self-esteem based on controlled eating habits and weight gain— and the DE behaviors of binge-eating, inappropriate compensatory behaviors, and restrained eating (Masuda, Price, & Latzman, 2012). These studies further support the cognitive-behavioral model of eating disorder pathology. In order to better help the mental health communities we serve, understanding the DE cognitions associated with specific DE behaviors is vital.

While Benas and Gibb (2008) established a mediational pathway between WSE and the overall frequency of a range of DE behaviors, they did not research the distinct relation of specific DE cognitions to WSE and DE behaviors. Further, another study specifically implicated the role of weight bias internalization as a mediator of the relation between WSE and DE behaviors, but it did not test weight bias internalization as a unique contributor to the variance in a distinct DE behavior while controlling for other established DE cognitions (O'Brien et al., 2016). Further research is needed to identify the distinct DE cognition predictors of each DE behavior; that is, which DE cognitions make unique contributions to the variance in each DE behavior while controlling for other DE cognitions that have been implicated as predictors in previous literature.

### Purpose of the Current Study

Identifying distinct pathways would have the potential to allow clinicians to tailor treatment to the DE cognitions most likely to be present when specific DE behaviors are exhibited. Identifying the distinct pathways would not only aid clinicians in the treatment of eating disorders, but it could potentially aid in interventions aimed at the prevention of eating disorder formation. While there is some evidence to suggest that DE cognitions play a role in DE behaviors, research is only beginning to reveal the social and cognitive processes that may underlie the formation of DE behaviors (O'Brien et al., 2016). The pathways researched in the current study will include a range of DE cognitions and DE behaviors.

The first purpose of the current study was to identify the DE cognitions that are unique contributors to the variance in distinct DE behaviors. The DE cognitions focused on in the current study were weight bias internalization, drive for thinness, and self-oriented perfectionism. Weight bias internalization is the tendency for a person to stigmatize themselves about their weight (Durso & Latner, 2008). Drive for thinness pertains to thoughts related to an excessive and extreme pursuit of thinness (Garner, Olmstead, & Polivy, 1983). Self-oriented perfectionism pertains to thoughts requiring perfection of oneself (Sherry, Hewitt, Besser, McGee, & Flett, 2004). Four separate DE behaviors were examined: emotional eating, restrained eating, inappropriate compensatory behaviors, and binge-eating behaviors.

## Hypotheses

There is a popular notion that WSE may motivate overweight people to engage in weight loss efforts, but this claim has been repeatedly rejected by researchers who note that WSE actually have the opposite effect (Puhl, Moss-Racusin, & Schwartz, 2007). The Cyclic Obesity/Weight Based Stigma theory suggests that WSE produce negative psychological responses in an individual and, when these responses occur, they lead to emotional eating— eating during emotional states— which maintains the cycle of WSE (Geliebter & Aversa, 2003; Tomiyama, 2014). O’Brien and colleagues (2016) proposed that weight bias internalization may be one of the negative responses of WSE; their findings suggest that WSE are linked to weight bias internalization and weight bias internalization is related to emotional eating.

**Hypothesis 1.** Weight bias internalization will uniquely contribute to the variance in emotional eating.

Restrained eating occurs when an individual persistently restricts dietary caloric energy intake (APA, 2013). Perfectionism is positively correlated with the endorsement of rigid rules about food and eating. These rigid rules may present themselves through restrained eating. Researchers identify the need for further research into more complex models of perfectionism and its relation to DE behaviors (Bardone-Cone, et al., 2007). Individuals who seek to maintain an unhealthily low weight report higher drive for thinness than those who do not. Drive for thinness may uphold restrained eating

behaviors as a means of achieving weight loss (Peñas-Lledó, Bulik, Lichtenstein, Larsson, & Baker, 2015).

**Hypothesis 2.** Drive for thinness and perfectionism will uniquely contribute to the variance in restrained eating behaviors.

Inappropriate compensatory behaviors are actions taken to counteract the effects of energy intake (APA, 2013). Because of the heightened sensitivity to others' expectations, such as the expectation to maintain an ideal body size and shape, and due to the relation between perfectionism and rigid rules concerning eating, perfectionism may relate to inappropriate compensatory behaviors (Bardon-Cone et al., 2007). The desire to maintain an unhealthy low body weight that is associated with drive for thinness may indicate drive for thinness as a predictor of inappropriate compensatory behaviors (Peñas-Lledó et al., 2015). Lillis and colleagues (2010) note that personal shame is a factor in self-based weight stigma; personal shame has been shown to be a potential predictor of bulimic behaviors (Levinson, Byrne, & Rodebaugh, 2016). By extension, weight bias internalization, through the mechanism of shame, may be predictive of inappropriate compensatory behaviors.

**Hypothesis 3.** Weight bias internalization, drive for thinness, and perfectionism will uniquely contribute to the variance in inappropriate compensatory behaviors.

Binge-eating behaviors require that an individual eat an objectively large amount of food in a discrete period of time (APA, 2013). Correlational research by Puhl and colleagues (2007) found that greater frequency of binge eating was related to

internalization of weight bias, suggesting that people who internalize weight bias may be more prone to binge-eating in response to WSE. Weight bias internalization has also been established as a mediator of binge eating behaviors (O'Brien et al., 2016).

**Hypothesis 4.** Weight bias internalization will uniquely contribute to the variance in binge-eating behaviors.

The second purpose of the current study was to assess the mediating roles of DE cognitions in the relation between WSE and DE behaviors. Previous research has established this effect but also called for further exploration (Benas & Gibb, 2008; O'Brien et al., 2016). While some effects have been discovered in previous research, replication is necessary in order to better understand the associations. With the goal of creating the best model for each DE behavior, only the DE cognitions observed to be unique contributors were examined as mediators of the relations between WSE and distinct DE behaviors.

**Hypothesis 5.** The DE cognitions that are unique contributors to the variance in each DE behavior will mediate the relation between WSE and the corresponding DE behaviors.

## Method

### Participants

In order to expand the variability in the sample, participants included undergraduate students at Stephen F. Austin State University (SFA), as well as volunteers

from a community sample. Formal diagnosis of an eating disorder was not a qualifying factor for participation. Students at SFA were compensated for participation with partial credit toward fulfillment of research requirements. To encourage volunteers from the community sample, participants were entered into a drawing to receive a \$25 Amazon gift card.

A power analysis was performed to estimate sample size. Based on a power of .8 and an expected small-medium effect size of .045, the target sample was 177 participants. A total of 215 participants were collected, 198 participants from the SFA Psychology participant pool and 17 from the community. After data cleaning, addressed in the Results section, 204 participants were included in analyses. The sample was majority female (84.80%) and had never been diagnosed with an eating disorder (95.60%), with a mean age of 20.99.

#### Weight Stigma Experiences Measures

The Brief Stigmatizing Situations Inventory (BSSI). The BSSI is a 10-item short form of the full Stigmatizing Situations Inventory (Myers & Rosen, 1999; Vartanian, 2015). Participants responded to scenarios of stigmatizing situations about teasing and discrimination, such as “Being singled out as a child by a teacher, school nurse, etc., because of your size” or “Being stared at in public,” by indicating how often these situations happened to them. Participants were asked to rate the frequency of their experiences using a 9-point Likert scale from 0 (*never*) to 9 (*daily*). Some items were modified to be inclusive of all weight classifications. The BSSI was found to have good

reliability in the sample ( $\alpha = .82$ ) and has been previously found to have convergent validity similar to the full version of the Stigmatizing Situations Inventory (Vartanian, 2015). Higher scores on the BSSI indicate a greater number of stigmatizing experiences (See Appendix B).

The Perceptions of Teasing Scale (POTS). The weight-teasing subscale of the POTS is a 6-item subscale (Thompson, Cattarin, Fowler, & Fisher, 1995). The subscale includes questions 1 through 6 of the POTS. Participants responded to items, such as “People made fun of you because of your weight” and “People laughed at you for trying out for sports because of your weight,” asking how often various teasing scenarios happened to them. Participants answered using a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). The questions were modified to be inclusive of all weight classifications, as has been done in previous research (O’Brien et al., 2016). The weight-teasing subscale of the POTS was found to have good reliability in the sample ( $\alpha = .93$ ) and convergent validity (Thompson et al., 1995). Higher scores indicate more weight teasing experiences (See Appendix C).

#### Disordered Eating Cognitions Measures

Weight bias internalization. The Modified Weight Bias Internalization Scale (WBIS-M) is an 11-item measure (Durso & Latner, 2008; Pearl & Puhl, 2014). The WBIS-M measures negative weight bias that an individual believes about themselves (Durso & Latner, 2008). Participants responded to items such as “Because of my weight, I feel that I am just as competent as anyone” and “I hate myself for my weight.”

Participants indicated their answers using a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The WBIS-M was modified from the original Weight Bias Internalization Scale in order to be applicable to all weight classes. The WBIS-M had acceptable reliability in the sample ( $\alpha = .72$ ) and strong construct validity (Pearl & Puhl, 2014). Higher scores on the WBIS-M indicate greater weight bias internalization. (See Appendix D).

Drive for thinness. The Drive for Thinness subscale of the Eating Disorder Inventory is a 7-item scale (Garner et al., 1983). Participants responded to statements concerning eating, dieting, and weight, such as “I think about dieting” and “I am terrified of gaining weight,” using a 6-point Likert scale ranging from 1 (*never*) to 6 (*always*). The Drive for Thinness subscale has good reliability in the sample ( $\alpha = .82$ ) and good convergent and discriminant validity (Garner et al., 1983). Higher scores on the Drive for Thinness subscale indicate a higher drive for thinness. (See Appendix E).

Perfectionism. The Multidimensional Perfectionism Scale (MPS) measures perfectionism on three dimensions: Self-Oriented, Other-Oriented, and Socially Prescribed (Hewitt & Flett, 1991). Due to its specific relation to disordered eating behaviors, the Self-Oriented subscale of the MPS was used to assess perfectionistic cognitions. The Self-Oriented Subscale is a 15-item scale. Participants responded to questions, such as “I strive to be the best at everything I do,” and “It makes me uneasy to see an error in my work,” that measure perfectionism that an individual requires of themselves. Participants responded to statements using a 7-point Likert scale ranging

from 1 (*disagree*) to 7 (*agree*). The Self-Oriented subscale had good reliability in the sample ( $\alpha = .87$ ) and has concurrent validity (Brown, Parman, Rudat, & Craighead, 2012). Higher scores indicate greater self-oriented perfectionism (See Appendix F).

### Disordered Eating Behaviors Measures

Restrained eating and emotional eating behaviors. The Dutch Eating Behaviour Questionnaire (DEBQ) is a 33-item scale consisting of three subscales: Restrained Eating, Emotional Eating, and External Eating (van Strien, Frijters, Bergers, & Defares, 1986). The 10-item DEBQ-Restrained Eating scale measures restrained eating behaviors with questions such as, “How often do you watch what you eat?”. The 13-item DEBQ-Emotional Eating subscale measures emotional eating behaviors with questions such as, “How often do you have a desire to eat when you are frightened?” Participants indicated how often situations occurred using a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). The DEBQ-Restrained Eating subscale and the DEBQ-Emotional Eating subscales had strong reliability in the sample ( $\alpha = .94$  and  $\alpha = .95$ , respectively); both subscales have high factorial validity (van Strien et al., 1986). Higher scores on the DEBQ-Restrained Eating subscale indicate greater eating restraint, and higher scores on the DEBQ-Emotional Eating subscale indicate greater emotional eating (See Appendix G).

Inappropriate compensatory behaviors. The Eating Disorder Diagnostic Scale (EDDS) measures a variety of eating disorder symptoms (Stice, Telch, & Rizvi, 2000). The items that measure inappropriate compensatory behaviors— 15, 16, 17, and 18—

were used in the current study. Participants indicated how many times per week, on average, they engaged in certain behaviors, from 0 to 14. The EDDS had acceptable reliability in the sample ( $\alpha = .71$ ) and has criterion and convergent validity (Stice et al., 2000). Higher scores on the inappropriate compensatory behavior questions of the EDDS indicate greater use of inappropriate compensatory behaviors (See Appendix H).

Binge-eating behaviors. The Binge Eating Scale (BES) measures emotions and excessive overeating behaviors; the behavior-based items— 2, 8, 9, 10, 11, and 13— of the BES were used to assess binge-eating behaviors (Gormally, Black, Daston, & Rardin, 1982). Participants were presented with behavior-based scenarios with three to four variations. Participants chose the variation that most accurately described themselves. The behavior items had acceptable reliability in the sample ( $\alpha = .72$ ) and the BES has convergent validity (Almeida et al., 2011; Duarte, Pinto-Gouveia, Ferreira, 2015). Higher scores on the behavior items of the BES indicate greater binge-eating behaviors (See Appendix H).

### Supplementary Measures

Demographics. The demographics collected in the current study included age, current weight, height, sex, gender, and indication of formal diagnosis of an eating disorder. If the participant indicated they had been previously diagnosed with an eating disorder, they were asked to identify the eating disorder with which they had been diagnosed.

Attention checks. Attention checks were implemented as a means of assessing participant attention while completing the survey. In order to justify exclusion of participants who failed to pay attention or follow instructions, multiple instructional manipulation check questions were used. The two items were modified from instructional manipulation checks used in previous research (Clifford & Jerit, 2015; Hauser & Schwarz, 2015; Oppenheimer, Meyvis, & Davidenko, 2009; See Appendix J).

### Procedure

The survey data were collected using the Qualtrics survey distribution website. Participants were recruited from two sources: the SFA Psychology participant pool and a community sample. The SFA Psychology participant pool consists of students who hail from a variety of majors. Students signed up to participate via the SONA System and were given access to a link to the survey. Participants from the community sample were contacted through posts on online social media websites and given access to the survey through a link.

Informed consent was collected electronically and indicated by the participant selecting “I Agree” after reading the informed consent; if individuals did not consent to participation, they were directed to the end of the survey (Appendix A). After electronic informed consent was collected, the surveys were presented and participants were asked to answer the survey questions. The scale presentations were randomized, and the questions within each survey were randomized, as well. One attention check question was presented at the beginning of the survey and one was presented near the middle. The

demographics were always presented at the end of the survey. The survey was set up to allow the participant to skip any questions he or she did not wish to answer.

Upon completion of the survey, participants from the SFA Psychology participant pool were automatically awarded credit toward partial completion of research requirements. In order to maintain confidentiality for the community sample, the identifying information collected for gift card distribution was collected on a separate survey. Participants were given the option to continue on to an external survey where they provided their mailing address in order to receive a gift card if they won. The gift card winner was drawn and gift cards were mailed to the address provided within two weeks of study completion.

### Data Analysis

Research Models: Hypotheses 1-4. A hierarchical multiple regression was used to test whether certain DE cognitions uniquely contribute to the variance in specific DE behaviors, as in Hypotheses 1-4. While some hypotheses specified more than one DE cognition as a unique contributor to the variance in DE behaviors, the hierarchical multiple regression examined only one DE cognition at a time. In order to control for the other DE cognitions that could account for variance in each DE behavior, the DE cognitions not being tested as the unique contributor were entered into Step 1 of each hierarchical regression model. This removed the shared variance and unique variance contributed by the other DE cognitions. For all tests of Hypotheses 1-4, alpha will be set at .05. The change in  $R^2$  was interpreted using the clinical significance cutoff values

provided by Ferguson (2009): small,  $R^2 = .04$ ; moderate,  $R^2 = .25$ ; strong,  $R^2 = .64$ .

However, it is important to keep in mind that the  $R^2$  values are a rough guide and rigid adherence to the classification of effects as small, moderate, and strong is not recommended.

Research Model: Hypothesis 5. A simple mediation model was used to test Hypothesis 5. In a simple mediation model, the relation between a predictor variable and a criterion variable is explained by another variable, the mediator. Therefore, mediators act as an alternative, potentially causal, pathway between a predictor variable and a criterion variable. There are three parts to a mediation relation: the relation between the predictor variable and the mediator variable,  $a$ ; the relation between the mediator variable and the criterion variable,  $b$ ; the relation between the predictor variable and the criterion variable,  $c$ . There are two pathways of connecting the predictor variable to the criterion variable. The pathway of predictor variable to mediator variable and mediator variable to criterion variable is known as the indirect effect. The pathway from the predictor variable to the criterion variable, while controlling for the mediator variable, is the direct effect,  $c'$  (Figure 1).

The PROCESS macro, developed by Hayes (2012), was used to test whether the indirect effect was significant. The PROCESS macro utilizes ordinary least square regression and a bootstrapping approach that involves creating a theoretical sample distribution by sampling, with replacement, a number of cases. A higher number of bootstrapping resamples can limit the variation in values each time a new bootstrap

confidence interval is produced; however, more than 10,000 bootstrap resamples are not necessary (Hayes, 2013). Ten thousand bootstrap resamples and 95% confidence intervals were used in the current study. The confidence intervals produced indicate whether the indirect effect is statistically significant from zero ( $\alpha = .05$ , two-tailed). If the confidence interval contains a zero value, then the indirect effect is not statistically different from zero. Percent mediation ( $P_M$ ) was used to measure the effect size of the indirect effect. This method creates a ratio of the indirect effect to the total effect; that is, it designates what proportion of the total effect is accounted for by the indirect effect (Preacher & Kelley, 2011).

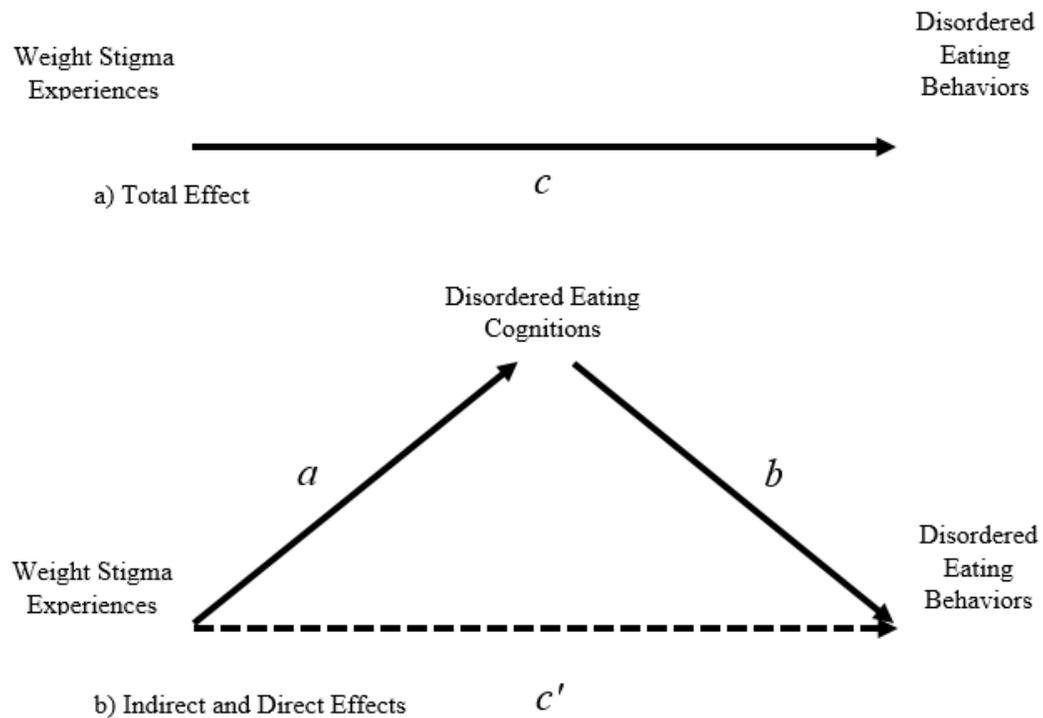


Figure 1. Mediation model being tested.

## Results

### Data Cleaning and Assumptions

Data were cleaned, tested for assumptions, and analyzed using SPSS statistical software. A total of 215 people participated in the study. Nine participants were removed from analyses for completing less than 80% of the survey (McCabe, Mack, & Fleeson, 2012). Upon scale computation, participants who were missing less than 10% of scale questions and whose data was found to be Missing Completely at Random had their individual scale mean imputed for the missing data points (Schafer & Graham, 2002).

Univariate and multivariate outliers were also assessed and addressed prior to running the hierarchical regression. Univariate outliers were addressed by identifying participants whose responses were 3.29 standard deviations above or below the mean (Tabachnick & Fidell, 2012). Four data points were identified in the inappropriate compensatory behaviors measure and one datum was identified in the BSSI measure as being above the cutoff. These data were replaced with the cutoff value, 32.99 for the inappropriate compensatory behaviors measure and 5.42 for the BSSI (Cohen, 2013). Multivariate outliers were assessed using Mahalanobis distance. A chi-squared value with five degrees of freedom and  $p < .001$  yielded a cutoff score of 20.515. Two participants were removed for exceeding the cutoff. After participants were excluded for missing data or outliers, the final participant total was 204.

There were a large number of participants who did not pass the instructional manipulation checks for the survey; instead of reading the instructions and providing the specified answers, many participants answered the questions as they normally would. Of the 204 participants remaining after data cleaning, only 48 passed both manipulation checks. Participants were answering the questions as they normally would and, because the size of the sample drastically decreased and the correlations between the variables were overall similar both with and without the participants who did not pass removed, the sample retained all participants (Table 1).

Table 1

## Summary of Correlations and Descriptive Statistics for Scores on the Predictor, Mediator, and Outcome Variables

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
1. SSI	1.93	.89	–	.70***	.39**	.40**	.46***	.46**	.39**	.40**	.33*	.10
2. POTS	1.87	1.02	.67***	–	.37**	.09	.42**	.36**	.22	.26*	.25*	.12
3. DFT	3.52	1.17	.35***	.40***	–	.32*	.61***	.63***	.52***	.55***	.66***	.32*
4. MPS	76.69	14.69	.08	.02	.19**	–	.24	.29*	.39**	.32*	.29*	.08
5. WBIS-M	2.73	.74	.51***	.53***	.69***	.06	–	.68***	.38**	.29*	.51***	.43**
6. REB	2.60	1.01	.38***	.36***	.73***	.16*	.65***	–	.36**	.42**	.37**	.08
7. EEB	2.63	.99	.42***	.32***	.56***	.09	.47***	.40***	–	.25*	.64***	.12
8. ICB	8.21	6.40	.28***	.26***	.47***	.06	.38***	.48***	.16*	–	.36**	-.05
9. BES	11.09	3.28	.27***	.28***	.59***	.14*	.49***	.43***	.50***	.33***	–	.42**
10. BMI	26.93	6.81	.34**	.46**	.25**	-.10	.38**	.23**	.15*	.18**	.22**	–

*Note.* Correlations with participants who did not pass the instructional manipulation checks removed ( $n = 48$ ) are presented above the diagonal, and correlations with all participants retained ( $n = 204$ ) are presented below the diagonal. Means and standard deviations for scales with all participants retained are presented. For all scales, higher scores indicate greater endorsement of the construct being assessed. SSI = Stigmatizing Situations Inventory; POTS = Perceptions of Teasing Scale; DFT = Drive for Thinness; MPS = Multi-Dimensional Perfectionism Scale; WBIS-M = Modified Weight Bias Internalization Scale; RED = Restrained Eating Behaviors; EEB = Emotional Eating Behaviors; ICB = Inappropriate Compensatory Behaviors; BES = Binge Eating Scale; BMI = Body Mass Index.

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

Use of a multiple regression model necessitates testing a number of data assumptions: normality, linearity, homoscedasticity, multicollinearity, and independence. Univariate normality was assessed using a Shapiro-Wilk test. Results of the test indicated that all variables except perfectionism were significantly different from a normal distribution, indicating a non-normal distribution of error variance among the variables; however, the Shapiro-Wilk test relies on null hypothesis significance testing, which is easily influenced by large sample sizes. Therefore, skewness was also used. The SSI, POTS, and IBC measures all exceeded a skew of 1, indicating they were positively skewed and not normally distributed. Homoscedasticity was assessed using a visual inspection of the P-P Plots; the SSI, POTS, and ICB measures were found to be heteroscedastic. Linearity was tested using inspection of the scatterplots for each variable combination; no non-linear relations were identified, indicating the assumption of linearity was met. Independence was tested using the Durbin-Watson statistic. All variable combinations had a Durbin-Watson value close to 2, with values ranging from 1.68-2.16, indicating the assumption of independence was met. The tolerance and variance inflation factors were used to test the assumption of no multicollinearity. The tolerance values were all above .1 and the variance inflation factors were all below 10, indicating no multicollinearity in the data (Field, 2013; Tabachnick & Fidell, 2012).

The assumptions of normality and homoscedasticity were likely violated for the SSI, POTS, and ICB measures; however, because Hypotheses 1-4 are only being utilized as a means of narrowing down the DE cognitions which are unique contributors to DE

behaviors, the violations of the assumptions are ignorable. The PROCESS macro utilizes bootstrap sampling, which takes 10,000 samples, with replacement, and produces a theoretical sample that is assumed to be normally distributed and homoscedastic, making the assumptions met for Hypothesis 5.

Findings: Hypotheses 1-4

Hypothesis 1. At the first step of the hierarchical multiple regression, perfectionism and drive for thinness significantly predicted emotional eating. After controlling for perfectionism and drive for thinness in Step 1, weight bias internalization accounted for an additional 1.70% of the variance in emotional eating  $F_{\Delta}(1, 201) = 4.91$ ,  $p = .028$ . Hypothesis 1 was supported (Table 2).

Table 2

*Results of Hierarchical Multiple Regression Testing the Unique Contribution of Weight Bias Internalization to the Prediction of Emotional Eating*

Variables	Step 1			Step 2		
	<i>b</i>	<i>SE</i>	$\beta$	<i>b</i>	<i>SE</i>	$\beta$
Drive for Thinness	0.46	0.05	.54***	0.35	0.07	.42***
Perfectionism	0.00	0.00	.00	0.00	0.00	.01
Weight Bias Internalization				0.24	0.11	.18*
$R^2$	.29			.31		

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

Hypothesis 2a. At the first step of the hierarchical multiple regression, perfectionism and weight bias internalization significantly predicted restrained eating. After controlling for perfectionism and weight bias internalization in Step 1, drive for

thinness accounted for an additional 13.5% of the variance in restrained eating  $F_{\Delta}(1, 201) = 62.53, p < .001$ . Hypothesis 2a was supported (Table 3).

Hypothesis 2b. At the first step of the hierarchical multiple regression, drive for thinness and weight bias internalization significantly predicted restrained eating. After controlling for drive for thinness and weight bias internalization in Step 1, perfectionism did not account for a significant amount of variance in restrained eating,  $F_{\Delta}(1, 201) = .94, p = .332$ . Hypothesis 2b was not supported (Table 3).

Table 3

*Results of Hierarchical Multiple Regressions Testing the Unique Contributions of Drive for Thinness and Perfectionism to the Prediction of Restrained Eating*

Variables	Step 1			Step 2		
	<i>b</i>	<i>SE</i>	$\beta$	<i>b</i>	<i>SE</i>	$\beta$
Perfectionism	0.01	0.00	.11*	0.00	0.00	.05
Weight Bias Internalization	0.88	0.07	.64***	0.41	0.09	.30***
Drive for Thinness				0.44	0.06	.51***
$R^2$	.43			.57		

Variables	Step 1			Step 2		
	<i>b</i>	<i>SE</i>	$\beta$	<i>b</i>	<i>SE</i>	$\beta$
Weight Bias Internalization	0.40	0.09	.29***	0.41	0.09	.30***
Drive for Thinness	0.45	0.06	.52***	0.44	0.06	.51***
Perfectionism				0.00	0.00	.05
$R^2$	.56			.57		

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

Hypothesis 3a. At the first step of the hierarchical multiple regression, perfectionism and drive for thinness significantly predicted inappropriate compensatory behaviors. After controlling for perfectionism and drive for thinness, weight bias internalization did not account for a significant amount of variance in inappropriate compensatory behaviors,  $F_{\Delta}(1, 199) = 1.63, p = .203$ . Hypothesis 3a was not supported (Table 4).

Hypothesis 3b. At the first step of the hierarchical multiple regression, perfectionism and weight bias internalization significantly predicted inappropriate compensatory behaviors. After controlling for perfectionism and weight bias internalization, drive for thinness accounted for an additional 8% of the variance in inappropriate compensatory behaviors,  $F_{\Delta}(1, 199) = 20.63, p < .001$ . Hypothesis 3b was supported (Table 4).

Hypothesis 3c. At the first step of the hierarchical multiple regression, drive for thinness and weight bias internalization significantly predicted inappropriate compensatory behaviors. After controlling for drive for thinness and weight bias internalization, perfectionism did not account for a significant amount of variance in inappropriate compensatory behaviors,  $F_{\Delta}(1, 199) = .14, p = .707$ . Hypothesis 3c was not supported (Table 4).

Table 4

*Results of Hierarchical Multiple Regressions Testing the Unique Contribution of Weight Bias Internalization, Drive for Thinness, and Perfectionism to the Prediction of Inappropriate Compensatory Behaviors*

Variables	Step 1			Step 2		
	<i>b</i>	<i>SE</i>	$\beta$	<i>b</i>	<i>SE</i>	$\beta$
Perfectionism	-0.01	0.03	-.03	-0.01	0.03	-.02
Drive for Thinness	2.60	0.35	.48***	2.18	0.48	.40***
Weight Bias Internalization				0.96	0.75	.11
$R^2$	.22			.23		

Variables	Step 1			Step 2		
	<i>b</i>	<i>SE</i>	$\beta$	<i>b</i>	<i>SE</i>	$\beta$
Weight Bias Internalization	3.30	0.57	.38***	0.96	0.75	.11
Perfectionism	0.02	0.03	.04	-0.01	0.03	-.02
Drive for Thinness				2.18	0.48	.40***
$R^2$	.15			.23		

Variables	Step 1			Step 2		
	<i>b</i>	<i>SE</i>	$\beta$	<i>b</i>	<i>SE</i>	$\beta$
Drive for Thinness	2.14	0.47	.40***	2.18	0.48	.40***
Weight Bias Internalization	0.98	0.74	.11	0.96	0.75	.11
Perfectionism				-0.01	0.03	-.02
$R^2$	.23			.23		

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

Hypothesis 4. At the first step of the hierarchical multiple regression, perfectionism and drive for thinness significantly predicted binge eating. After controlling for perfectionism and drive for thinness, weight bias internalization accounted

for an additional 1.6% of the variance in binge eating,  $F_{\Delta}(1, 201) = 5.06, p = .026$ .

Hypothesis 4 was supported (Table 5).

Table 5

*Results of Hierarchical Multiple Regression Testing the Unique Contribution of Weight Bias Internalization to the Prediction of Binge Eating*

Variables	Step 1			Step 2		
	<i>b</i>	<i>SE</i>	$\beta$	<i>b</i>	<i>SE</i>	$\beta$
Perfectionism	0.01	0.01	.03	0.01	0.01	.04
Drive for Thinness	1.63	0.16	.58***	1.29	0.22	.46***
Weight Bias Internalization				0.77	0.34	.17*
$R^2$	.34			.36		

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

### Findings: Hypothesis 5

Hypothesis 5a. A regression analysis was used to examine the indirect effect of stigmatizing situations on emotional eating behaviors through weight bias internalization. There was a significant indirect effect found,  $ab = .19, SE = .05, 95\% CI = .11, .29, P_M = .43$ . The same analysis was used to examine the indirect effect of perceptions of teasing on emotional eating behaviors through weight bias internalization. There was a significant indirect effect found,  $ab = .21, SE = .05, 95\% CI = .12, .31, P_M = .67$  (Figure 2).

Hypothesis 5b. A regression analysis was used to examine the indirect effect of stigmatizing situations on restrained eating behaviors through drive for thinness. There was a significant indirect effect found,  $ab = .27, SE = .05, 95\% CI = .17, .37, P_M = .63$ .

The same analysis was used to examine the indirect effect of perceptions of teasing on restrained eating behaviors through drive for thinness. There was a significant indirect effect found,  $ab = .28$ ,  $SE = .05$ , 95% CI = .19, .37,  $P_M = .77$  (Figure 3).

Hypothesis 5c. A regression analysis was used to examine the indirect effect of stigmatizing situations on inappropriate compensatory behaviors through drive for thinness. There was a significant indirect effect found,  $ab = 1.06$ ,  $SE = .26$ , 95% CI = .59, 1.59,  $P_M = .55$ . The same analysis was used to examine the indirect effect of perceptions of teasing on inappropriate compensatory behaviors through drive for thinness. There was a significant indirect effect found,  $ab = 1.08$ ,  $SE = .24$ , 95% CI = .64, 1.59,  $P_M = .66$  (Figure 4).

Hypothesis 5d. A regression analysis was used to examine the indirect effect of stigmatizing situations on binge eating behaviors through weight bias internalization. There was a significant indirect effect found,  $ab = .90$ ,  $SE = .16$ , 95% CI = .61, 1.22,  $P_M = .90$ . The same analysis was used to examine the indirect effect of perceptions of teasing on binge eating behaviors through weight bias internalization. There was a significant indirect effect found,  $ab = .80$ ,  $SE = .15$ , 95% CI = .51, 1.12,  $P_M = .85$  (Figure 5).

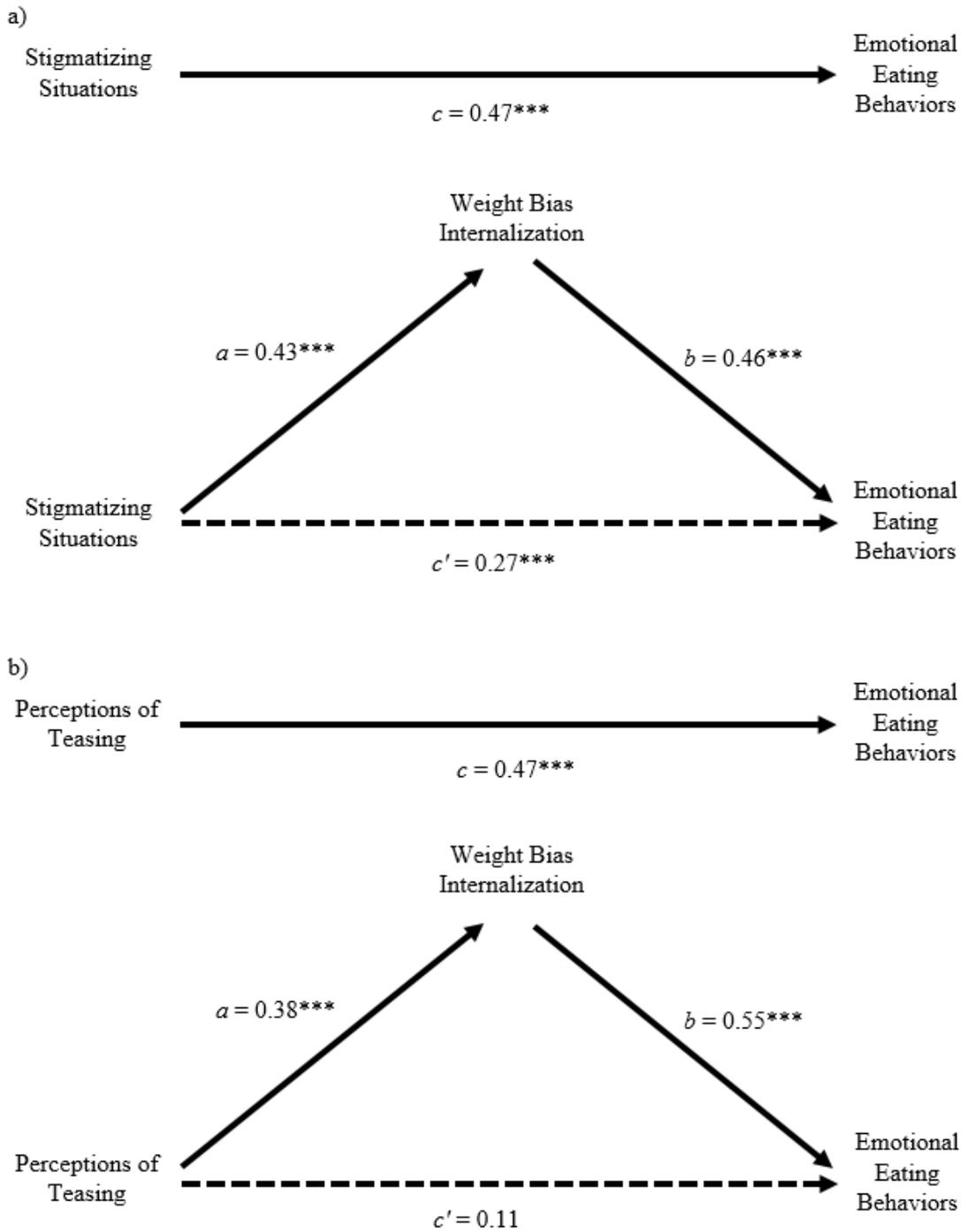


Figure 2. Mediation model being tested for Hypothesis 5a.

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

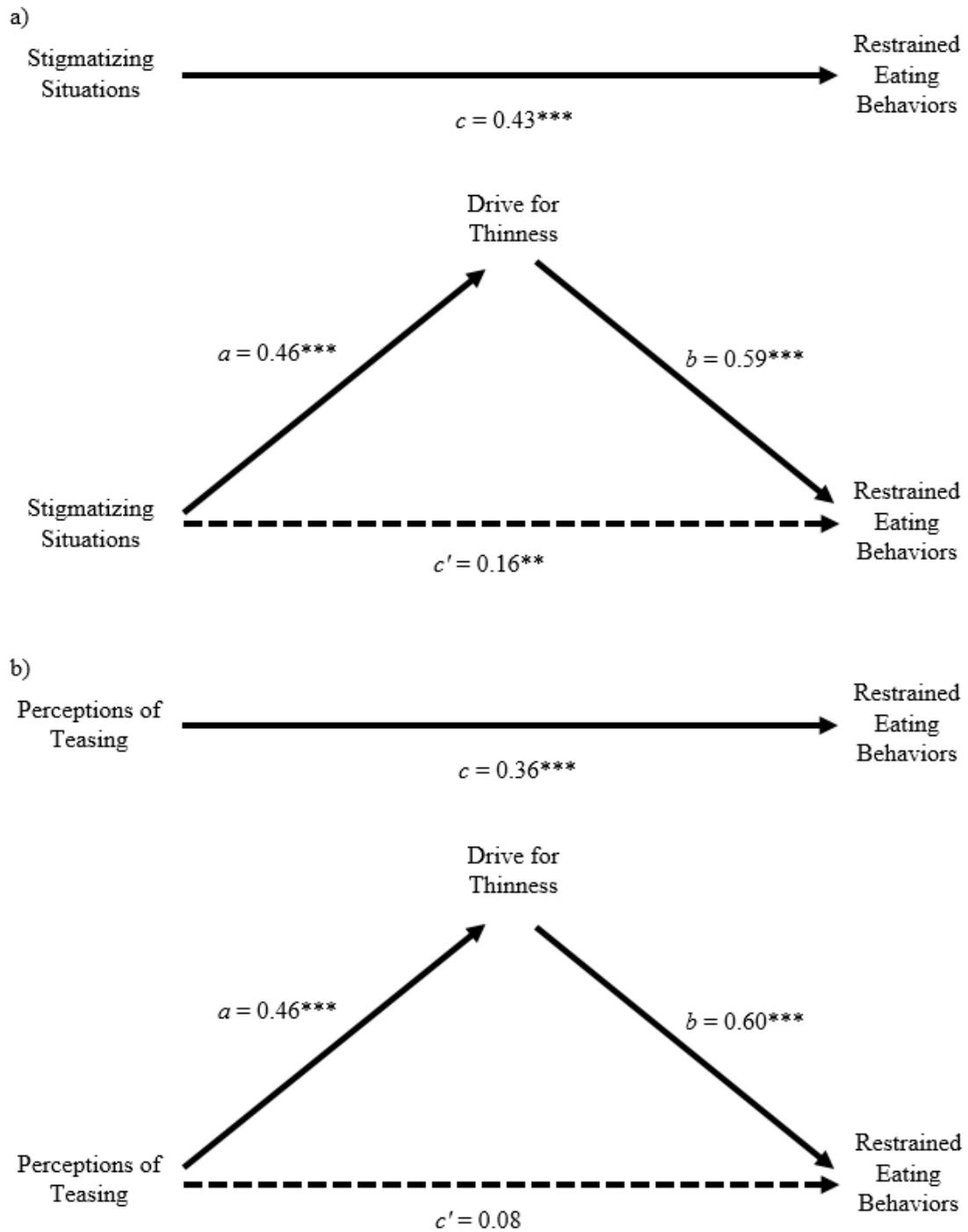


Figure 3. Mediation model being tested for Hypothesis 5b.

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

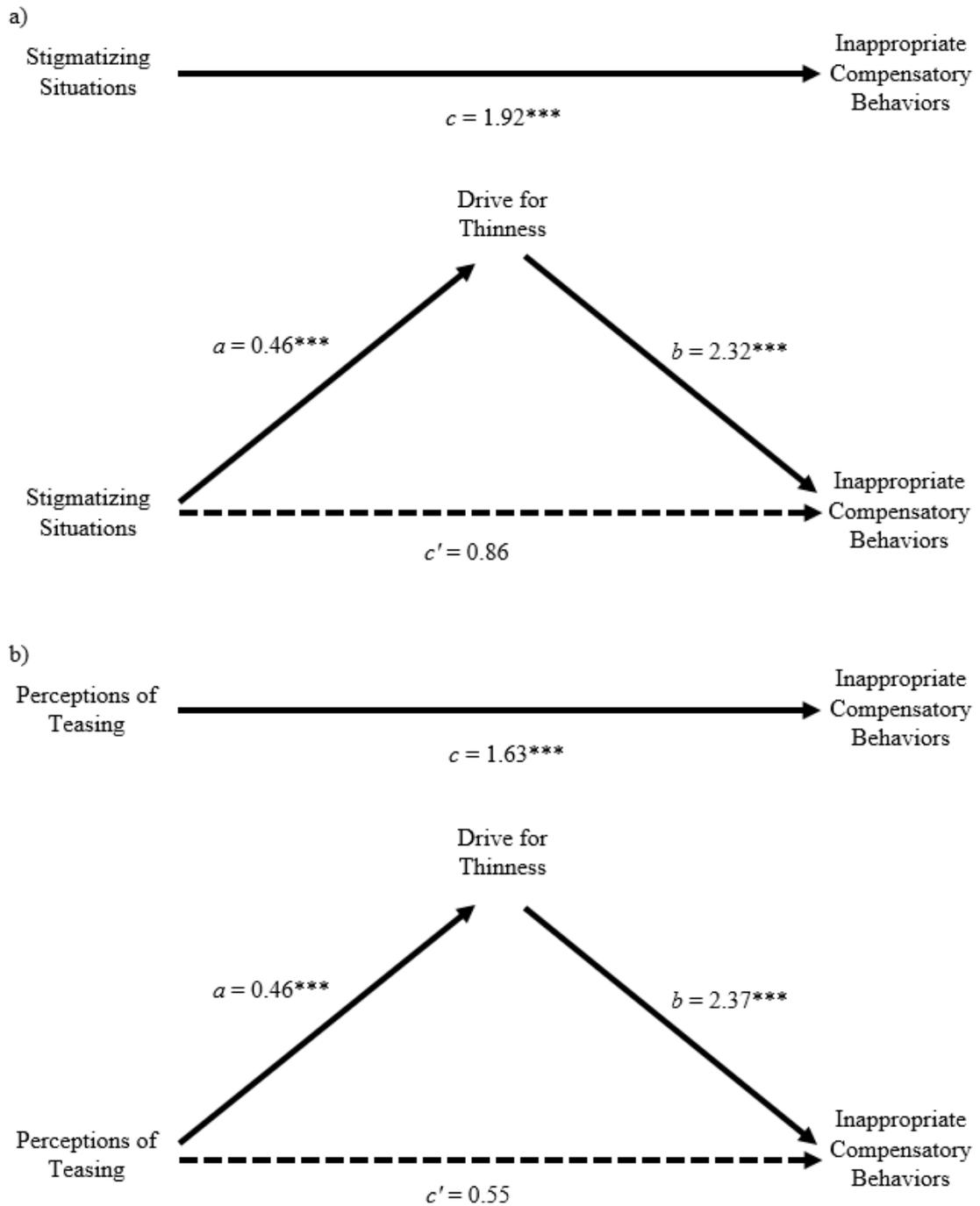


Figure 4. Mediation model being tested for Hypothesis 5c.

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

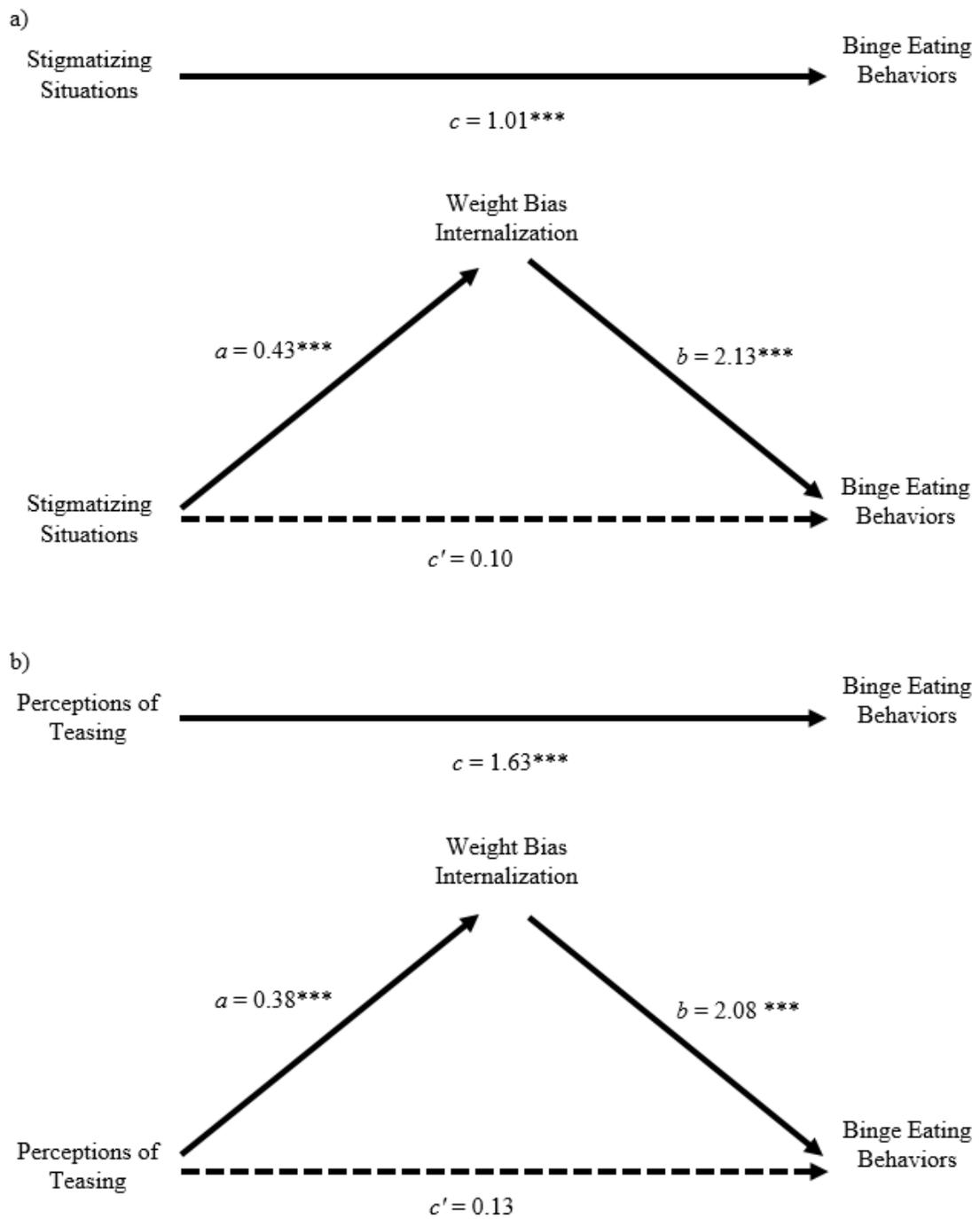


Figure 5. Mediation model being tested for Hypothesis 5d.

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

## Discussion

The initial goal of the present study was to investigate whether the DE cognitions of weight bias internalization, drive for thinness, and perfectionism make unique contributions to distinct DE behaviors. The second goal was to test these unique contributors as mediators of the association between weight stigmatization and DE behaviors.

### Implications: Hypotheses 1-4

Hypothesis 1 was fully supported, indicating weight bias internalization does make a unique contribution as a predictor of emotional eating while controlling for the impact of other DE cognitions. The unique contribution observed in the current study had a minimal effect size, 1.7%, whereas O'Brien and colleagues (2016) observed, without controlling for other DE cognitions, weight bias internalization to account for 5% of the variance in emotional eating behaviors, a clinically significant small effect size (Ferguson, 2009). While weight bias internalization may make a unique contribution to prediction of emotional eating behaviors, this contribution is minimal; therefore, focusing on weight bias internalization when treating emotional eating behaviors may not be as effective as previous literature has suggested. Unexpectedly, data from the present study suggest that drive for thinness warrants further investigation as a DE cognition that could be more relevant in understanding emotional eating than weight bias internalization or perfectionism. Taken together, the discrepancy with previous findings and the emergence

of an unexpected predictor in the model highlight the need to consider weight bias internalization in the context of other DE cognitions in future effects to examine its strength as a predictor of emotional eating.

Hypothesis 2 was partially supported in that drive for thinness made a unique contribution to the variance in restrained eating, but perfectionism did not. As people who have a higher drive for thinness are more likely to exhibit restrained eating behaviors, this relation was expected (Peñas-Lledó et al., 2015). While controlling for the impact of other DE cognitions, drive for thinness contributes 13.5% of the variance in restrained eating. While longitudinal and experimental evidence could add to our understanding of temporal precedence, this small-moderate effect size indicates that drive for thinness could play a substantial role in the formation of restrained eating behaviors; treatment methods aimed at addressing a client's drive for thinness could be beneficial when treating restrained eating behaviors. While previous research has established a cross-sectional association between perfectionism and rigid rules about eating, which may include restrained eating, in this sample, the majority of the variance in restrained eating contributed by perfectionism was shared with other DE cognitions, indicating that perfectionism did not make a unique contribution (Bardon-Cone et al., 2007). Interestingly, perfectionism did not co-vary with any other predictor variables, yet the majority of the variance it contributed was explained by other variables. While perfectionism is linked to restrained eating, the current data suggests that the impact of perfectionism was nearly entirely shared with other DE cognitions; therefore, it may be

beneficial to research the impact of perfectionism and other DE cognitions working in tandem to predict restrained eating.

Hypothesis 3 was also partially supported; while drive for thinness was found to make a unique contribution to inappropriate compensatory behaviors, weight bias internalization and perfectionism were not. Drive for thinness is characterized by a desire to maintain an unhealthy low body weight; these thoughts likely contribute to a desire to engage in inappropriate compensatory behaviors as a means of achieving that goal. The majority of variance contributed by weight bias internalization and perfectionism individually was shared with other DE cognitions; therefore, they did not make unique contributions to the variance in inappropriate compensatory behaviors. When treating clients who engage in inappropriate compensatory behaviors, it may be practical to focus on also addressing the client's drive for thinness, which makes a small-moderate contribution of 8% to the variance.

Hypothesis 4 was fully supported by the data. Weight bias internalization made a unique contribution to the variance in binge eating behaviors. This finding is not surprising given that researchers have previously identified a relation between weight bias internalization and binge eating behaviors (O'Brien et al., 2016). The effect size associated with the current study, however, is surprising. When tested on its own, without controlling for other DE cognitions, O'Brien and colleagues found weight bias internalization to account for 4% of the variance in binge eating behaviors— a small effect size; however, when the current study controlled for other DE cognitions, weight

bias internalization accounted for only 1.6% of the variance in binge eating behaviors— a minimal effect size. Cognitive mediators beyond those included in the present study may be more relevant in improving the understanding of binge eating.

Perfectionism did not make a unique contribution to any of its predicted DE behaviors. While previous research has not specifically established the predictive power of perfectionism on specific DE behaviors, the lack of effect is surprising. Despite perfectionism's strong association with eating disorder pathology, nearly all of the variance attributed by perfectionism to restrained eating behaviors and inappropriate compensatory behaviors was shared with other DE cognitions. This may indicate that, while perfectionism is a significant factor in the pathology of eating disorders, it may be more effective to treat other known cognitions which make significant unique contributions.

In contrast, drive for thinness attributed unique variance to all of its predicted DE behaviors. In fact, drive for thinness made the largest practical contributions to the DE behaviors, with unique contributions accounting for 8-13.50% of the variance. This suggests that treating a person's drive for thinness may make a substantial impact on their use of restrained eating and inappropriate compensatory behaviors.

#### Implications: Hypothesis 5

Hypothesis 5 was fully supported; all DE cognitions which made unique contributions to DE behaviors were identified as mediators of the relation between WSE and the respective DE behaviors. The total effects for the relations between general

weight stigmatization and DE behaviors were larger than the total effects for weight based teasing and DE behaviors, indicating that general victimization may be a more important predictor of DE behaviors than weight-based teasing. These findings identify DE cognitions to be explored in future work as modeling explanatory pathways between WSE and DE behaviors. That is, WSE may lead to the formation of DE cognitions, which in turn may lead to DE behaviors. In an effort to prevent eating disorders, focusing on teaching healthy reactions to WSE may prevent the formation of DE cognitions.

#### General Implications

To our knowledge, this study is the first of its kind to examine the extent to which distinct DE cognitions may predispose victims of weight stigma to have an increased likelihood of exhibiting distinct DE behaviors. These findings aid in refining our understanding of the developmental pathways associated with specific forms of disordered eating, thus providing a starting place for treating those disordered eating behaviors through therapeutic strategies targeting disordered eating cognitions. The specific developmental models of psychopathology established by the current research can potentially aid in the development of preventative measures, as well as the development of effective interventions pertinent to treatment of disordered eating behaviors. There is some concern over the minimal, yet significant, effect sizes that weight bias internalization contributed to emotional and binge-eating behaviors; however, it is important not to dismiss these individual predictors of disordered eating due to small effect sizes, as it may be the case that a large number of predictors with weak to moderate

unique predictive value have cumulative effects on risk for emotional eating and binge-eating behaviors. Disordered eating behaviors are complex, and, given that eating disorders are multiply determined, it is unlikely that disordered eating behaviors can be largely explained with just a few strong predictors.

### Limitations

The biggest limitation of the current study is the lack of a large enough clinical sample. Only 4.4% of the participants had been diagnosed with an eating disorder. This led to low levels of eating disorder behaviors in the sample, which, in turn, led to non-normal distributions of the error amongst some of the variables. This limits the generalizability of Hypothesis 3; however, this was addressed through use of the bootstrapping method in Hypothesis 5c. Our conclusions should be interpreted with caution for several other reasons. Given the survey was administered online, environmental factors may have influenced participant reporting. The correlational nature of these data also preempts causal inferences. There is a need for additional longitudinal and experimental work investigating cognitions in relation to weight stigmatization and disordered eating. Lastly, use of structural equation modeling over a hierarchical multiple regression models could identify latent constructs (Preacher & Hayes, 2008).

### Future Research

Future research should further explore the mediating effect of DE cognitions on the relation between WSE and DE behaviors in a clinical sample. Researching the effects of DE cognitions on DE behaviors across eating disorder pathologies would also be

beneficial. The current study only explored as mediators the DE cognitions which were unique contributors to DE behaviors; therefore, the mediating effects of those which did not make a unique contribution were not explored. Serial multiple mediator models may offer a more comprehensive and efficient means of parsing variance and establishing the relative strength of various cognitions as mediators of DE behaviors. It also may be worth considering whether, when confronted with WSE, certain coping responses may make an individual more or less likely to exhibit DE cognitions. Therefore, exploring the moderating effect different coping strategies have on the mediated relation may provide more information about the formation of DE behaviors and provide additional methods of treatment and prevention of eating disorders.

### Conclusion

The present study adds to the existing literature on cognitive mediators of disordered eating, and particularly to some analytical factors that may be impeding our current understanding of these cognitive mediators. While outcomes of previous studies on dichotomous thinking and emotional eating can be generalized only to people with obesity or people with eating disorders, our findings have wider implications concerning people with normal and underweight weight, as well.

In summary, the results suggest that weight bias internalization and drive for thinness were the only DE cognitions found to make unique contributions to distinct DE behaviors. In examining these cognitions as mediators of the relation between stigmatizing situations and DE behaviors and the relation between weight-related teasing

and DE behaviors, weight bias internalization was supported as a significant mediator for both emotional eating and binge eating, and drive for thinness was supported as a significant mediator of inappropriate compensatory behaviors and restrained eating. Replication of the distinct pathways seen here will be necessary. If confirmed, such findings should impress upon clinicians the need to be aware of weight stigmatization and teasing as risk factors for weight bias internalization and drive for thinness. Experimental tests of the effects of recognition of and reduction of weight bias internalization and drive for thinness could inform cognitive-behavioral treatment strategies targeting emotional eating, restrained eating, inappropriate compensatory behaviors, and binge eating.

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## APPENDIX A

### Informed Consent

*(You may print this page for your records)*

**Consent is hereby given to participate in the study titled: Stigma, Thoughts, and Eating Behaviors**

**PURPOSE:** The present study is designed to identify the thoughts most readily associated with certain disordered eating behaviors. Additionally, the study will examine the influence of certain types of stigma and thoughts in predicting disordered eating behaviors.

**DESCRIPTION OF THE STUDY:** You are invited to participate in a research study conducted by Sarah Pelfrey, a graduate student in the Psychology Department at Stephen F. Austin State University, under the supervision of Dr. Sarah Savoy and Dr. Sylvia Middlebrook. In order to be eligible for the study, you must have engaged in at least one instance of binge eating, purging, and/or food restriction within the last six months. You **MUST** be 18 years of age or older. If you meet these requirements, you will be asked to answer some questions about experiences you have had. Participation in this study will take you approximately 30 minutes. The questionnaires you will answer concern eating behaviors and associated thoughts, and instances of discrimination you have experienced. We ask that you answer each question as truthfully and accurately as possible. Some of the questions ask about matters that are personal and could potentially make you uncomfortable. If you feel uncomfortable about questions or do not wish to answer, you may skip those questions. You should decide on your own whether or not you want to participate in this study. There is no penalty if you decide not to participate. If you do decide to participate, you have the right to stop participating at any time, without penalty.

**BENEFITS:** This study may contribute to our understanding of eating disorders, and it may provide clinical psychologists and other mental health professionals with information concerning treatment and prevention methods for certain mental disorders. Participants recruited through Stephen F. Austin State University will receive 1 research credit for their participation. All other participants will be given the option to be entered

into a drawing for a \$25 Amazon.com gift card. In order to entered into the drawing, you will need to enter your name and mailing information into an external survey, the link for which will be provided on the final page of the survey. This link is external and cannot be connected in any way to answers on the previous survey.

**RISKS AND DISCOMFORTS:** There is no physical risk beyond what would be experienced in everyday life. There are a number of possible psychological discomforts associated with participation. The survey asks questions which require that you reflect on unpleasant thoughts, behaviors, and memories. This may be distressing to some individuals. If you find that you are distressed by completing the survey, you should notify the researcher and you may contact any of the mental health service providers listed below in the QUESTIONS section.

**CONFIDENTIALITY:** We will make every effort to protect your privacy. No identifying information will be collected in the initial survey. If you are a participant recruited from outside of Stephen F. Austin State University, you will be given the opportunity to provide mailing information to be entered into a drawing for a gift card. This identifying information will not, in any way, be associated with your answers to the survey questions. This portion is entirely optional. This information will only be used to mail a gift card, should you win.

**QUESTIONS:** If you have any questions or concerns about being in this study, you may contact Sarah Pelfrey at pelfreyse@jacks.sfasu.edu or Dr. Sylvia Middlebrook, at middlebrs@sfasu.edu. The researchers may also be reached by phone through the SFA Psychology Department: (936) 468-4402. This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human participants follow federal regulations. You may contact the SFASU Office of Research and Sponsored Programs at orsp@sfasu.edu or 936-468-6606 if you would like more information regarding your rights as a research participant.

*If you become distressed in regard to the study, you may wish to contact the on-campus counseling center or a mental health professional in the surrounding community that may be able to provide services for you. A partial list of available resources is provided below:*

National Eating Disorders Association Information and Referral Helpline: 1-800-931-2237

National Suicide Prevention Lifeline: 1-800-273-8255

Burke Center Crisis Hotline: 1-800-392-8343

SFA Counseling Center: 1-936-468-2401

**SIGNATURE:** I have read or have had read to me the description of the research study as outlined above. By clicking on “I agree to participate” below I am indicating that I freely volunteer to participate in the study. I understand that I do not have to take part in this study, and that my refusal to participate will involve no penalty or loss of rights to which I am entitled. I further understand that I am free to later skip any questions about which I feel uncomfortable and that I may withdraw my consent and discontinue participation in this study at any time. Additionally, by clicking on “I agree to participate” below, I affirm that I am at least 18 years old.

## APPENDIX B

### Brief Stigmatizing Situations Inventory

Below is a list of situations that people encounter because of their weight. Indicate whether, and how often, each of these situations happened to you. Use the scale below:

0-----1-----2-----3-----4-----5-----6-----7-----8-----9  
Never Once in Several times About Several About once Several About Several Daily  
your life in your life once/yr. times/yr. a month times/mo. once/wk. times/wk.

1. Being glared at or harassed by bus passengers for the amount of room you are taking up.
2. Being singled out as a child by a teacher, school nurse, etc. because of your weight.
3. Being stared at in public.
4. Children loudly making comments about your weight to others.
5. Having a doctor recommend a diet, even if you did not come in to discuss weight issues.
6. Having a romantic partner exploit you, because s/he assumed you were desperate and would put up with it.
7. Having family members feel embarrassed by you or ashamed of you.
8. Having people make assumptions about your eating habits because of your weight.
9. Not being hired because of your weight.
10. Overhearing other people making rude remarks about you in public.

## APPENDIX C

### Weight Teasing Subscale of the Perceptions of Teasing Scale

**We are interested in whether you have been teased.**

For each question rate how often you think you were teased (using the scale provided, “never” (1) to “very often” (5))

1. People made fun of you because your weight.	1	2	3	4	5
2. People made jokes about your weight.	1	2	3	4	5
3. People laughed at you for trying out for sports because of your weight.	1	2	3	4	5
4. People called you names because of your weight	1	2	3	4	5
5. People pointed at you because of your weight.	1	2	3	4	5
6. People snickered about your weight when you walked into a room alone.	1	2	3	4	5

## APPENDIX D

### Modified Weight Bias Internalization Scale (WBIS-M)

1. Because of my weight, I feel that I am just as competent as anyone. <sup>R</sup>
2. I am less attractive than most other people because of my weight.
3. I feel anxious about my weight because of what people might think of me.
4. I wish I could drastically change my weight.
5. Whenever I think a lot about my weight, I feel depressed.
6. I hate myself for my weight.
7. My weight is a major way that I judge my value as a person.
8. I don't feel that I deserve to have a really fulfilling social life, because of my weight.
9. I am okay being the weight that I am. <sup>R</sup>
10. Because of my weight, I don't feel like my true self.
11. Because of my weight, I don't understand how anyone attractive would want to date me.

Items are rated on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree).

## APPENDIX E

### Drive for Thinness Subscale of the Eating Disorder Inventory

1. I eat sweets and carbohydrates without feeling nervous.
2. I think about dieting.
3. I feel extremely guilty after overeating.
4. I am terrified of gaining weight.
5. I exaggerate or magnify the importance of weight.
6. I am preoccupied with the desire to be thinner.
7. If I gain a pound, I worry that I will keep gaining.

Items are rated on a 6-point Likert scale ranging from 1 (*never*) to 6 (*always*).

## APPENDIX F

### Multidimensional Perfectionism Scale

INSTRUCTIONS: Listed below are a number of statements concerning personal characteristics and traits. Read each item and decide whether you agree or disagree & to what extent.

1. When I am working on something, I cannot relax until it is perfect.
2. One of my goals is to be perfect in everything I do.
3. I never aim for perfection in my work. <sup>R</sup>
4. I seldom feel the need to be perfect. <sup>R</sup>
5. I strive to be as perfect as I can be.
6. It is very important that I am perfect in everything I attempt.
7. I strive to be the best at everything I do.
8. I demand nothing less than perfection of myself.
9. It makes me uneasy to see an error in my work.
10. I am perfectionistic in setting my goals.
11. I must work to my full potential at all times.
12. I do not have to be the best at whatever I am doing. <sup>R</sup>
13. I do not have very high goals for myself. <sup>R</sup>
14. I set very high standards for myself.
15. I must always be successful at school or work.

Items are rated using a 7-point Likert scale ranging from 1 (*disagree*) to 7 (*agree*).

## APPENDIX G

### The Dutch Eating Behaviour Questionnaire

1 (never) 2 (seldom) 3 (sometimes) 4 (often) 5 (very often) \*\*\*= 0 (not relevant)

1. If you have put on weight, do you eat less than you usually do? \*\*\*
2. Do you try to eat less at mealtimes than you would like to eat?
3. How often do you refuse food or drink offered because you are concerned about your weight?
4. Do you watch exactly what you eat?
5. Do you deliberately eat foods that are slimming?
6. When you have eaten too much, do you eat less than usual the following days?  
\*\*\*
7. Do you deliberately eat less in order not to become heavier?
8. How often do you try not to eat between meals because you are watching your weight?
9. How often in the evening do you try not to eat because you are watching your weight?
10. Do you take into account your weight with what you eat?
11. Do you have the desire to eat when you are irritated? \*\*\*
12. Do you have a desire to eat when you have nothing to do? \*\*\*
13. Do you have a desire to eat when you are depressed or discouraged? \*\*\*
14. Do you have a desire to eat when you are feeling lonely? \*\*\*
15. Do you have a desire to eat when somebody lets you down? \*\*\*
16. Do you have a desire to eat when you are cross? \*\*\*
17. Do you have a desire to eat when you are expecting something unpleasant to happen?
18. Do you get the desire to eat when you are anxious, worried, or tense?
19. Do you have a desire to eat when things are going against you or when things have gone wrong?
20. Do you have a desire to eat when you are frightened? \*\*\*
21. Do you have a desire to eat when you are disappointed? \*\*\*
22. Do you have a desire to eat when you are emotionally upset? \*\*\*
23. Do you have a desire to eat when you are bored or restless? \*\*\*

## APPENDIX H

### Inappropriate Compensatory Behaviors Questions of the Eating Disorder Diagnostic Scale

1. How many times per week, on average, over the past 3 months have you made yourself vomit to prevent weight gain or counteract the effects of eating?  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
2. How many times per week, on average, over the past 3 months have you used laxatives or diuretics to prevent weight gain or counteract the effects of eating?  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
3. How many times per week, on average, over the past 3 months have you fasted (skipped at least 2 meals in a row) to prevent weight gain or counteract the effects of eating?  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
4. How many times per week, on average, over the past 3 months have you engaged in excessive exercise specifically to counteract the effects of overeating episodes?  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

## APPENDIX I

### Binge Eating Scale

Below are groups of statements about behavior, thoughts, and emotional states. Please indicate which statement in each group best describes how you feel. \*\*\* Only the questions relating to behaviors were used\*\*\*

#### Question 2

- I have no difficulty eating slowly.
- I may eat quickly, but I never feel too full.
- Sometimes after I eat fast I feel too full.
- Usually I swallow my food almost without chewing, then feel as if I ate too much.

#### Question 8

- It is rare that I eat so much that I feel uncomfortably full.
- About once a month I eat so much that I feel uncomfortably full.
- There are regular periods during the month when I eat large amounts of food at meals or between meals.
- I eat so much that usually, after eating, I feel pretty bad and I have nausea.

#### Question 9

- The amount of calories that I consume is fairly constant over time.
- Sometimes after I eat too much, I try to consume few calories to make up for the previous meal.
- I have a habit of eating too much at night. Usually I'm not hungry in the morning and at night I eat too much.
- I have periods of about a week in which I impose starvation diets, following periods of when I ate too much. My life is made of binges and fasts.

#### Question 10

- I can usually stop eating when I decide I've had enough.
- Sometimes I feel an urge to eat that I cannot control.
- I often feel impulses to eat so strong that I cannot win, but sometimes I can control myself.
- I feel totally unable to control my impulses to eat.

#### Question 11

- I have no problems stopping eating when I am full.

- I can usually stop eating when I feel full, but sometimes I eat so much it feels unpleasant.
- It is hard for me to stop eating once I start, I usually end up feeling too full.
- It is a real problem for me to stop eating and sometimes I vomit because I feel so full.

Question 13

- I eat three meals a day and occasionally a snack.
- I eat three meals a day and I usually snack, as well.
- I eat many meals, or skip meals regularly.
- There are times when I seem to eat continuously without regular meals.

## APPENDIX J

### Instructional Manipulation Checks

#### **Food Cravings**

Most modern theories of decision-making recognize the fact that decisions do not take place in a vacuum. Individual preferences and knowledge, along with situational variables, can greatly impact the decision process. In order to facilitate our research, we are interested in whether you actually take the time to read the directions. So, rather than answering the following question accurately, please check only “Chinese Food” and “None of the above” and then continue. This will demonstrate to us that you have taken the time to read and follow the instructions.

1. Which of the following types of foods do you usually crave when/if you have a strong urge to eat a large amount of food?

Mexican Food; Chinese Food; Italian Food; American Food; Greek Food;  
Other (please specify); None of the above

#### **Eating Habits**

Most modern theories of decision-making recognize the fact that decisions do not take place in a vacuum. Individual preferences and knowledge, along with situational variables, can greatly impact the decision process. In order to facilitate our research, we are interested in whether you actually take the time to read the directions. So, rather than answering the following question accurately, please check only “Other” and type in “I read the instructions” and then continue. This will demonstrate to us that you have taken the time to read and follow the instructions.

2. Which of the following foods do you eat regularly?

Fruits; Green Vegetables; Starchy Vegetables; Meats; Dairy; Other (please specify); None of the above

## APPENDIX K

### Demographic Questions

1. What is your age?
2. What is your current weight?
3. What is your height?
4. What is your biological sex?  
Male; Female
5. What is your gender identity?  
Male; Female; Non-Binary
6. Have you been diagnosed with an eating disorder?  
Yes; No
7. Which eating disorder have you been diagnosed with?  
Anorexia nervosa; Bulimia nervosa; Binge eating Disorder; Unspecified  
Eating Disorder
8. Are you currently being treated for an eating disorder or body image related concerns?

## APPENDIX L

### Debriefing Form

Thank you for participating in the present study, Stigma, Thoughts, and Eating Behavior. We appreciate your time and participation. If you have any question or concerns, please feel free to contact our research team now or at a later date. You may contact the researchers by phone at the SFA Psychology Department (936.468.4402) or via email ([pelfreyse@jacks.sfasu.edu](mailto:pelfreyse@jacks.sfasu.edu)). You may also contact the Office of Research and Sponsored Programs via phone (936.468.6606) or via email at [orsp@sfasu.edu](mailto:orsp@sfasu.edu).

Your participation in this study is greatly appreciated. The combined results of data from all participants will be analyzed in order to help us understand thoughts and behaviors associated with eating disorders, and may potentially provide mental health professionals with information that could assist in the development of therapeutic interventions.

If you became distressed in regard to the study, you may wish to contact the on-campus counseling center or a mental health professional in the surrounding community that may be able to provide services for you. A partial list of available resources is provided below:

National Eating Disorders Association Information and Referral Helpline: 1-800-931-2237

National Suicide Prevention Lifeline: 1-800-273-8255

Burke Center Crisis Hotline: 1-800-392-8343

SFA Counseling Center: 1-936-468-2401

Thank you.

## VITA

After completing high school at Sherman High School in Sherman, Texas, Sarah went on to study psychology and theology at Abilene Christian University in Abilene, Texas. She completed her Bachelor of Science in Psychology in May 2014. Sarah then went on to study at Stephen F. Austin State University in August 2015, where she received her Masters of Arts in General Psychology in August 2017.

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