Obesity Stigma, Psychological Flexibility and Disordered Eating Behavior Amongst People who are Overweight and Obese

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Dedication

I would like to dedicate my thesis to Dr. David Greenway, who managed to tell me in the same evening that I do not give myself enough credit and that I am also a creampuff. I will never forget the "proud papa" smile when he found me reading "About Behaviorism". I miss his mischievous grin and slow chortle of a laugh. I was fortunate to have him as a professor, confidant, and friend and he is missed every day.

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List of Abbreviations

AAQ-II	Acceptance and Action Questionnaire-II
AAQ-W	Acceptance and Action Questionnaire for Weight-Related Difficulties
BMI	Body Mass Index
DES	Daily Eating Survey
ELOCS	Eating Loss of Control Scale
FAAQ	Acceptance and Action Questionnaire for Food
NES	Night Eating Syndrome
NEQ	Night Eating Questionnaire
PASE	Periodic Assessment of Stigmatizing Experiences
WSSQ	Weight Self-Stigma Questionnaire

Chapter 1: Introduction

Being overweight involves having excessive adipose tissue, or body fat. Obesity is an excessive accumulation of body fat that results in health difficulties (World Health Organization, 2013). According to the World Health Organization (2013), there is a worldwide obesity epidemic, with 1.4 billion people across the globe classified as overweight, and 500 million people classified as obese. Sixty-five percent of the world's population lives in countries where the mortality rates due to obesity are higher than those due to malnourishment (WHO, 2013). In the United States alone, 31.8% of the adult population and 17% of children and teens are classified as obese (Food and Agriculture Organization of the United Nations, 2013; WHO, 2013). In the last thirty years, these numbers have doubled for adults and tripled for children and teens (WHO, 2013). The Center for Disease Control and Prevention (2012) estimates that, if the current trend continues, 42% of the U.S. population will be obese by 2030. This would result in an increase of $550 billion in health care costs over the next seventeen years (CDC, 2012).

Illness and Disability Associated with Overweight and Obesity

Being overweight or obese has serious health implications. Every year, 2.8 million people die due to being overweight or obese (WHO, 2013). Obese individuals face a greater risk of mortality due in part to metabolic changes that affect blood pressure, increased levels of triglycerides and cholesterol, and insulin resistance. Medical issues such as high blood pressure, heart disease, stroke and diabetes are more common among the obese and generally become more severe as body mass increases (Must et al., 1999; WHO, 2013). An increased body mass index (BMI) is also associated with an increased

risk of cancers of the breast, colon/rectum, endometrium, kidney, esophagus, and pancreas (WHO, 2013).

Even without severe medical issues, obese people face an increased risk of physical disability (Walter, Kunst, Mackenbach, Hofman, & Tiemeier, 2009). A relatively healthy obese person (i.e., one who has not been diagnosed with any obesity related medical condition) is two times more likely to be disabled than a person of average weight. Obese children and teens are five times more likely to report difficulties in physical mobility than those of average weight (Schwimmer, Burwinkle, & Varni, 2003). As BMI increases, recovery from injury becomes increasingly unlikely, particularly for people with a BMI of 30 and above (Walter et al., 2009). The number of years that obese individuals lose to disability increases with BMI, simply because of the physical stress that excess weight places upon the joints and bones (Jinks, Jordan, & Croft, 2006). Unfortunately, carrying excess weight often comes with a psychological burden as well.

Psychological Struggles Associated with Overweight and Obesity

People struggling with overweight and obesity are at risk for numerous psychological issues. Obese people exhibit an increased lifetime prevalence of mood and anxiety disorders (Mather, Cox, Enns, & Sareen, 2009; Petry, Barry, Pietrzak, & Wagner, 2008). Depressive symptomatology appears to be positively correlated with BMI (Friedman, Reichmann, Costanzo, & Musante, 2002). Antisocial, avoidant, obsessive-compulsive, paranoid, and schizoid personality disorders are all at increased prevalence among obese people (Petry et al., 2008).

Even apart from diagnosable disorders, people struggling with excess weight seem to have greater difficulty maintaining quality of life. Obese children and teens are five and a half times more likely to report decreased health-related quality of life than their healthy weight counterparts (Schwimmer et al., 2003). In fact, obese children and teens report quality of life levels that are similar to children undergoing treatment for cancer (Schwimmer et al., 2003). Impairment in quality of life has been seen across many different domains such as physical functioning (Kolotkin, Crosby, & Williams, 2002; Le Pen, Lévy, Loos, Banzet, & Basdevant, 1998), self-esteem (Kolotkin et al., 2002), sexual functioning (Kolotkin et al., 2002), public distress (Kolotkin et al., 2002), and work life (Kolotkin et al., 2002). As with most other issues related to obesity, as BMI increases, the quality of life of the individual decreases across all domains of life, thereby increasing the level of impairment experienced by the individual. The struggle to maintain an adequate quality of life seems to have significant costs for the obese. Even after controlling for diagnostic status, people who are obese are more likely to have considered suicide in their lifetime or in the past year than those of normal weight (Mather et al., 2009).

Although psychological struggles associated with excess weight are extremely common, they may be particularly salient or severe for those who disparage their bodies. Struggles with body image have been shown to partially mediate the relationship between obesity and psychological difficulties like low self-esteem and depression (Friedman et al., 2002; Shin & Shin, 2008). In overweight women, self-ratings of physical appearance tend to predict global ratings of the self (Matz, Foster, Faith, & Wadden, 2002).

Obesity and Disordered Eating

Despite the serious consequences that carrying excess weight has for physical functioning, psychological well-being, and overall quality of life, many people who struggle with their weight also struggle with disordered eating patterns (Darby, Hay, Mond, Rodgers, & Owen, 2007). Disordered eating for the overweight and obese may include episodes of binge eating and night eating. There is a higher prevalence of eating disorders, like Binge Eating Disorder and Night Eating Syndrome, among the overweight and obese than non-obese population. Those that do not meet criteria for clinical diagnosis tend to exhibit the same behaviors associated with eating disorders, like bulimic episodes, binging episodes, dietary restraint, and night eating (Darby et al., 2007). Engaging in disordered eating is associated with increased levels of distress and dysfunction (Darby et al., 2007; Farrow & Tarrant, 2009) and may lead to weight cycling (Spitzer et al., 1992, 1993).

Binge eating. Binge eating involves eating larger quantities of food than most people would eat in the same context (American Psychiatric Association, 2013). Clinical criteria for Binge Eating Disorder (BED) are met if a person engages in multiple binging episodes per week for at least three months. Prevalence of episodic binge eating (i.e., binge eating that does not meet criteria for a diagnosis of BED) is estimated at around 20% in a non-clinical obese population. BED is diagnosable in 30% of the population of obese adults seeking outpatient treatment (Fairburn & Wilson, 1993; Spitzer et al., 1992) and in about 36% in obese clients in an inpatient setting (Decaluwé, Braet, & Fairburn, 2002).

Regardless of whether the individual meets criteria for BED, binge eating is positively correlated with BMI, especially for those with a BMI of 35 or greater (Spitzer et al., 1992). It also seems to be linked to poorer psychological outcomes. For example, binge eating has been linked to depression, self-esteem and body image dissatisfaction (Decaluwé et al., 2002; Nauta, Hospers, Jansen, & Kok, 2000; Spitzer et al., 1992, 1993). Obese people who engage in binge eating tend to score higher on measures regarding eating concern, shape concern and overall eating difficulties than non-binging obese individuals (Hsu et al., 2002).

Night eating. Night Eating Syndrome (NES) involves recurring episodes of night eating that occur after awaking from sleep or excessive food consumption that occurs after the evening meal (APA, 2013). It appears to be associated with obesity to some extent, as obese people are five times more likely to suffer from NES than non-obese people (Lundgren et al., 2006). NES is thought to be a combination of eating, sleep, and mood disorders (Stunkard & Allison, 2003). Night eaters are thought to awaken and eat an average of three times during the night (Stunkard & Allison, 2003). These episodes may contribute to higher levels of depression and lower self-esteem for obese night eaters (Gluck, Geliebter, & Satov, 2001).

Disordered eating predicts increased distress and dysfunction amongst obese people (Darby et al., 2007; Farrow & Tarrant, 2009). Disordered eating seems to be associated with depression, anxiety, suicidal ideation, and decreased quality of life (Herpertz-Dahlmann, Willie, Hölling, Vloet, Ravens-Sieberer, & BELLA Study Group, 2008). Identifying the contexts that contribute to disordered eating will promote the development of successful interventions for disordered eating and obesity. For example,

obesity stigmatization may be part of the social context that fosters the development and maintenance of disordered eating patterns amongst obese people.

Obesity and Stigmatization

Despite one-third of U.S. adults being classified as obese, obesity is widely considered to be unacceptable (Latner, O'Brien, Durso, Brinkman, & MacDonald, 2008; Rand, Resnick, & Seldman, 1997). For example, in one study, when offered the hypothetical chance to avoid obesity by enduring major personal sacrifices, 46% of participants report being willing to give up one year of their lives, and fifteen percent of respondents said they would give up 10 years or more (Schwartz, Vartanian, Nosek, & Brownell, 2006). These severe trade-offs extended even to parents' preferences for their children's outcomes. For example, 10% of participants reported that they would have their child suffer with anorexia to avoid them being obese (Schwartz et al., 2006). This fundamental unacceptability lays the foundation for stigma.

Goffman (1963) defines stigma as "an attribute that is deeply discrediting," saying that the result of the stigma is that it reduces the stigmatized "from a whole and usual person to a tainted, discounted one" (p. 3). For example, obese individuals are frequently stereotyped as lazy, self-indulgent, unattractive, bad, and worthless (Puhl & Brownell, 2001; Schwartz, Chambliss, Brownell, Blair, & Billington, 2003; Wolf, 2010). Further, unlike racial or gender stereotypes, public perception is that obesity is easily controllable, such that being obese is caused by a lack of self-discipline (Carels et al., 2009; Quinn & Crocker, 1999). In other words, stigmatizing attitudes suggest that not only are the obese lazy, self-indulgent, unattractive, bad, and worthless, but they are to

blame. Unfortunately, this stigma even applies to people of normal weight who were formerly obese (Latner, Ebneter, & O'Brien, 2012).

Individuals classified as obese are likely to experience weight-based stigmatization on a daily basis (Lewis et al., 2011). Common sources of stigma include employers, coworkers, landlords, teachers, students, administrators, doctors, nurses, dieticians, psychologists, and strangers (MacCann & Roberts, 2013; Puhl & Brownell, 2006; Schwartz et al., 2003; Teachman & Brownell, 2001; Wolf, 2010). Children as young as three years old have been found to subscribe to obesity stigma (Cramer & Steinwert, 1998; Richardson, Goodman, Hastorf, & Dornbusch, 1961). Daily contact with stigma from nearly everyone they meet puts obese people at a considerable disadvantage in domains like employment, education, relationships, and health care (Carels et al., 2009; O'Brien et al., 2008; Puhl & Brownell, 2003).

Employment. Obese employees are thought to be lazy, sloppy, slow, poor role models, less self-disciplined, and more likely to miss work than employees of normal weight (Puhl & Brownell, 2001). Job applicants who are obese receive more negative ratings of leadership potential, predicted success, likelihood of being hired, starting salary, and overall ranking when compared to normal weight applicants (O'Brien et al., 2008). Further, these attitudes tend to extend to employee treatment. For example, obese people tend to have lower wages and are promoted less than their thinner counterparts (Loh, 1993; Rudolph, Wells, Weller, & Baltes, 2009; Stunkard & Sørensen, 1993).

Education. Obese children's academic achievement may be impacted by weight bias displayed by their teachers and classmates as early as elementary school (Puhl & Latner, 2007). Obese students tend to have a lower grade point average than healthy-weight students, even after controlling for intelligence or socioeconomic status (MacCann & Roberts, 2013). Further, these educational disadvantages are elevated in contexts where average body size amongst students is lower (Crosnoe & Muller, 2004).

Relationships. Perhaps the most surprising sources of stigma are loved ones. Family members of obese people demonstrate the highest levels of stigma (Puhl & Brownell, 2006; Puhl, Moss-Racusin, Schwartz, & Brownell, 2008). Obesity stigma also comes from friends and spouses (Puhl & Brownell, 2006). The stigma from loved ones tends to increase with a person's BMI (Puhl & Brownell, 2006). New romantic relationships are also affected by obesity stigma, with obese people being the least preferred of potential sexual partners (Chen & Brown, 2005).

Healthcare. Healthcare professionals who currently work with obese patients (e.g., doctors and nutritionists) endorse obesity stereotypes such as lazy, noncompliant, undisciplined, and lacking willpower (Puhl & Brownell, 2001). Despite emerging models of addiction in obesity (Wang, Volkow, Thanos, & Fowler, 2004), the medical model predominantly views obesity as a behavioral issue that is due to a combination of physical inactivity, overeating and a high fat diet (Foster et al., 2003). This view indirectly limits access to healthcare. Perceived stigmatization from a healthcare provider has been shown to decrease the likelihood that obese individuals will make appointments, thereby further impacting health (Hebl & Xu, 2001).

Effects of Obesity Stigma

Obesity stigma plays a significant role in both physical and psychological struggles for the obese. For example, stigmatizing experiences predict depressive symptoms, self-esteem issues, body image dissatisfaction, binge eating disorder, and anxiety (Friedman et al., 2005; Friedman, Ashmore, & Applegate, 2008; Matz et al., 2002; Puhl & Brownell, 2006).

Stigma may amplify the psychological and physical struggles of the obese because of the chronic stress experienced by the stigmatized. Obese people experience increased levels of stress, which has adverse effects on blood pressure and cardiovascular health, when exposed to potentially stigmatizing experiences (Major, Eliezer, & Rieck, 2011). The more a person weighs, the more physiologically taxing stigmatizing experiences may be. There is a positive correlation between the individual's BMI and blood pressure in situations where stigma is perceived (Major et al., 2011). The stress associated with stigma even has cognitive effects, which impairs executive functioning (Major et al., 2011).

Obesity stigma appears to negatively influence behaviors that would result in a healthier weight status. Obese people are proportionately less responsive to an intervention targeting healthy eating and physical activity behaviors when they are exposed to stigma (Wott & Carels, 2010). The more stigmatizing their experiences, and the closer the source of the stigma, the fewer calories they burn. The more conscious obese individuals are of obesity stigma, the more negatively they judge their competence with physical activity (Schmalz, 2010), and the more they avoid it (Faith, Leone, Ayers,

Heo, & Pietrobelli, 2002; Vartanian & Novak, 2011). Exercise avoidance serves to protect obese people from the negative thoughts and feelings associated with stigma.

The experience of obesity stigma also predicts disordered eating (Davidson, Schmalz, Young, & Birch, 2008; Matz et al., 2002). Increased caloric intake and binge eating episodes frequently function as a coping mechanism in response to stigma (Wott & Carels, 2010). When Puhl and Brownell (2006) asked obese people how they coped with stigma, 79% of their total sample reported coping by eating more food. In other words, eating may allow the stigmatized individual to remove themselves from the negative thoughts and feelings that are associated with stigma. By promoting avoidant coping through eating and adopting a sedentary lifestyle, obesity stigma not only makes being obese more difficult, but it makes it less likely that obesity will change. This may be particularly true when the harshest source of obesity stigma is the self.

Internalization of Obesity Stigma: Self-Stigma

Generally, members of a distinct group are more likely to regard members of their in-group more positively than members of out-groups (Tajfel & Turner, 1979). Overweight and obese people, however, tend to regard other overweight or obese people more negatively than those of normal weight (Crandall, 1994; Friedman et al., 2005; Latner et al., 2008; Schwartz et al., 2006). In fact, obese people tend to endorse obesity stereotypes like “bad” and “lazy” at rates higher than non-obese people (Carels et al., 2009; Wang, Brownell, & Wadden, 2004). As a person’s BMI increases, so does the obesity stigma they endorse (Lieberman, Tybur, & Latner, 2011). Obese people internalize the stigma they experience, exhibiting obesity self-stigma, and blaming themselves for their poor treatment by others (Vartanian & Novak, 2011).

The internalization of obesity stigma comes with a range of costs. Obesity self-stigma amplifies the effects of stigma on body image dissatisfaction, anxiety, depression, binge eating episodes, and low self-esteem (Davidson et al., 2008; Durso & Latner, 2008; Lillis, Levin, & Hayes, 2011; Matz, et al., 2002; Puhl, Moss-Racusin, & Schwartz, 2007). Obesity self-stigma also contributes independently to decreases in health-related quality of life in domains like psychosocial functioning, role limitations, psychiatric symptoms and overall perceptions of health (Puhl et al., 2007).

Self-stigma also seems to amplify the contribution of stigma to the chronicity of obesity. Obesity self-stigma moderates the association between obesity stigma and exercise avoidance, such that the relationship between obesity stigma and exercise avoidance is strongest for those who internalize the stigma (Vartanian & Novak, 2011). Overweight and obese people who internalize weight-based stigma are more likely to respond to stigmatizing experiences by binge eating and failing to adhere to a diet (Puhl et al., 2007). With exercise avoidance and disordered eating as primary strategies for coping with obesity stigma and self-stigma, continued weight gain is inevitable. As weight increases, so does sensitivity to stigmatizing experiences (Major et al., 2011), and severity of self-stigma (Lieberman et al., 2011), creating a self-perpetuating cycle of weight-related distress and counterproductive attempts to relieve that distress. This cycle of avoidant coping characterizes a psychological vulnerability known as psychological inflexibility.

Psychological Inflexibility and Obesity

Difficulties experienced by obese people are not only attributable to stigma and self-stigma but also to attempts to avoid the weight- and food-related distress associated with stigma. Psychological inflexibility involves an inability to engage in purposive, values-based action because of cognitive rigidity and experiential avoidance (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Psychological inflexibility is associated with psychological suffering and poor physical health in a number of health-related domains including chronic pain (McCraken, Sato, & Taylor, 2013), diabetes (Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007), and obesity (Forman, Butryn, Hoffman, & Herbert, 2009; Lillis, Hayes, Bunting, & Masuda, 2009). Being able to fully and flexibly experience one's thoughts and feelings in service of one's chosen values is an important psychological contribution to physical health and health-related behaviors (see McCracken, 2011).

Eating is no exception. Psychological inflexibility predicts emotional eating and uncontrolled eating (Nevanperä, Lappalainen, Kuosma, Hopsu, Uitti, & Laitinen, 2013). Both psychological inflexibility with weight (Sandoz, Wilson, Merwin, & Kellum, 2013) and inflexibility with food cravings (Juarascio, Forman, Timko, Butryn, & Goodwin, 2011) contribute to disordered eating. Similarly, preliminary data support the short-term success of flexibility-based interventions with obese people. This short-term success has been found in interventions that aim to build flexibility with weight-related thoughts and feelings (Lillis et al., 2009) and that aim to build flexibility with food-related thoughts and feelings (Forman, et al., 2009). Continued intervention development in this area

depends on a refined understanding of the role of stigmatizing experiences in threatening long-term effectiveness.

Summary

Obesity is associated with a range of physical and psychological struggles. These struggles are perpetuated by the social environment, in which obese people are judged as undisciplined, sloppy, ugly, lazy and unintelligent. For many, obesity stigma tends to become internalized, negatively affecting the way obese people view themselves. Faced with obesity stigma and subsequent self-stigma, obese people tend to use disordered eating and avoidance of exercise as a means of coping with these negative experiences. In other words, stigma and self-stigma not only make being obese more painful, but also less likely to change. This kind of avoidant coping at significant cost to important life domains is known as psychological inflexibility. Emerging research suggests that psychological inflexibility around weight and food contribute to disordered eating, and that teaching flexibility can promote weight-loss behaviors and reduce self-stigma. To date no studies have assessed the relationships among self-stigma, psychological flexibility, and disordered eating in the context of stigmatizing experiences.

Current Study

The purpose of the current study was to investigate the relationships among stigmatizing experiences, self-stigma, disordered eating and psychological inflexibility in an obese population, with particular emphasis on the evaluation of psychological inflexibility as a moderator of the impact of stigmatizing experiences on disordered eating. Previous research in this area has relied upon retrospective self-report, which is inherently biased. The use of ecological momentary assessment allows for repeated

assessments over time, which allows for data collection that occurs in the participant's natural environment. This limits concerns with the validity of retrospective self-report and allows for analysis of variability over time (Haedt-Matt & Keel, 2011). Hypotheses include:

1) Perceived stigmatizing experiences (i.e., a fear of enacted stigma from society) would predict disordered eating such that increases in stigmatizing experiences would predict increases in self-reported disordered eating.

2) Weight- and food-related psychological inflexibility would moderate the relationship between perceived stigmatizing experiences and disordered eating such that those with the highest levels of psychological inflexibility would demonstrate the strongest relationship between stigma experiences and disordered eating. In addition, exploratory analyses would be used to determine whether food or weight flexibility was more important than overall flexibility.

3) Self-stigma (i.e., self-devaluation due to perceived stigmatization from society) would moderate the relationship between perceived stigmatizing experiences and disordered eating such that self-stigma would predict a stronger positive relationship between stigmatizing experiences and disordered eating.

4) Psychological inflexibility would predict increased perceived self-stigma such that increases in psychological inflexibility would predict increases in perceived self-stigma.

Chapter II: Methods

Participants

Individuals with a minimum BMI of 23, which is the technical designation for overweight (WHO, 2013), were recruited from a local bariatric clinic and from social media sites such as Facebook. Participants were 46 females and 5 males ranging in age from 20 to 69 years old with a mean age of 42.3. Sample BMI ranged from 25.4 to 65.8 with a mean BMI of 40.2.

Patients from a bariatric clinic were presented with a small informational card inviting them to consider participating in the study by their health care practitioner. People who were interested in participating recorded their name and contact information on the card. A video that gave a brief explanation of the study was shared on Facebook. Individuals who watched the video and were willing to participate filled out a short demographic survey online. Both groups that participated were entered into a raffle for one of three different Amazon gift cards. Any individuals with a primary smart phone were eligible to participate in the study, and were contacted within five days to review the study's justification, procedure, purpose, risks, benefits, and compensation. Those who wished to participate were emailed a web link that was used to consent for participation and to complete the initial questionnaire assessment. In addition, the researcher emailed each participant an overview of the study procedures.

Measures: Initial Questionnaire Assessment

Demographic Questionnaire. Participants completed a brief questionnaire to collect information about age, gender, race, and BMI (Appendix A). In addition, they provided a preference for periodic and daily assessment times and method of contact.

Acceptance and Action Questionnaire-II. The AAQ-II (Bond et al., 2011; Appendix B) is a 7-item self-report instrument that measures psychological flexibility. It is an updated version of the AAQ-I with improved psychometric properties. The AAQ-II is consistent with the original (r =.97), has high internal reliability (α = .84) and is acceptable in 3- and 12- month test-retest reliability at .81 and .79, respectively. Questions such as "I'm afraid of my feelings" are assessed on a 7-point Likert scale that ranges from 1 (never true) to 7 (always true). Higher scores on the AAQ-II indicate greater levels of psychological inflexibility. In the current sample, the internal reliability, though smaller than reported in Bond et al. (2011) original sample was acceptable (α = .71).

Acceptance and Action Questionnaire for Weight-Related Difficulties. The AAQ-W (Lillis & Hayes, 2008; Appendices C and D) is a 22-item self-report instrument that measures acceptance of weight-related feelings, defusion with weight-related thoughts, and the extent that thoughts and feelings interfere with valued action on two subscales. The first subscale is Truth, which looks at how true the 10 questions ask participants to rate "the truth of each statement as it applies to you." Questions like "It's OK to feel fat" are assessed on a 7-point Likert scale ranging from 1 (never true) to 7 (always true). The final twelve questions ask participants to rate "How valid or believable" each statement is. Questions like "I will always be overweight" are assessed on a 7-point Likert scale ranging from 1 (not at all believable) to 7 (completely believable). Although the Truth and Believability subscales can be scored separately, they can also be scored to obtain an overall score (Lillis & Hayes, 2008). Lower scores indicate less experiential avoidance and more psychological flexibility surrounding

weight-related issues. The AAQ-W has shown good internal consistency (α =.88) as well as good validity (Lillis & Hayes, 2008). The internal reliability of the present sample is a bit lower than the original (α = .69).

Acceptance and Action Questionnaire for Food. The FAAQ (Juarascio et al., 2011; Appendix E) is a 9-item self-report instrument that measures acceptance of distressing food-related thoughts or cravings and willingness to engage in healthy eating regardless of these experiences. Nine statements like "It's OK to experience cravings and urges to overeat, because I don't have to listen to them" are assessed on a 6-point Likert scale ranging from 1 (very seldom true) to 6 (always true). Higher scores predict greater acceptance of one's motivations to eat. The FAAQ has been shown to have high internal consistency (α =.93) and acceptable test-retest reliability (*r* =.72). In the current sample, the internal reliability, though smaller than that reported for Juarascio et al. (2011) original sample is acceptable (α = .85).

Weight Self-Stigma Questionnaire. The WSSQ (Lillis et al., 2010; Appendix F) is a 12-item self-report instrument that measures internalized weight stigma on two subscales. The first subscale is Fear of Enacted Sigma, which is fear of direct experiences of social discrimination in various domains like employment, housing, interpersonal relationship, etc. The second subscale is weight-related Self-Devaluation, which is the internalization of stigma received by society. These are two distinct but correlated subscales. The fear of enacted stigma subscale asks questions like "People discriminate against me because I've had weight problems". The self-devaluation subscale asks questions like "I'll always go back to being overweight". Both scales items are assessed on a 5-point Likert scale ranging from 1 (completely disagree) to 5

(completely agree). Higher scores indicate higher levels of fear of enacted stigma and self-devaluation. The WSSQ as a whole shows good internal consistency (α =.88) as do the subscales: fear of enacted stigma (α =.88) and self-devaluation (α =.81; Lillis et al., 2010). The total scale and subscales show acceptable test-retest reliability for the total scale (*r* =.78), fear of enacted stigma (*r* =.80), and self-devaluation (*r* =.63). The internal reliability for the current sample is lower than that of the original sample (α = .69).

Night Eating Questionnaire. The NEQ (Allison et al., 2008; Appendix G) is a 15-item instrument that measures the severity of Night Eating Syndrome. Fifteen questions like "Do you have cravings or urges to eat snacks after supper, but before bedtime?" are assessed on a Likert type scale ranging from 0 (not at all) to 4 (extremely so). Items 1, 4, and 14 are reverse scored. Items 1-12 and 14 are summed. Item 13 is not included in the total score, but is used to rule out the parasomnia, Nocturnal Sleep Related Eating Disorder (NS-RED). Item 15 is not added to the total score, but instead is used as a descriptor of the course of the symptoms. A score of 25 or greater is suggestive of night eating syndrome, and a score of 30 and above is a strong indicator of NES. NEQ has shown adequate internal consistency (α =.70) and reliability (α = .70). In the current sample, the internal reliability is higher than that of the original sample (α = .78).

Eating Loss of Control Scale. The ELOCS (Blomquist et al., 2014; Appendix H) is an 18-item self-report instrument that measures multiple aspects of loss of control over eating independent of the amount of food eaten. Eighteen questions are broken down into two parts per question. The "a" part asks questions like "During the past four weeks, how many times have you felt helpless to control your eating urges?" where the respondent would put the number of times they felt helpless to control their eating urges.

The "b" part asks questions like "On average, during these times, how helpless did you feel to control your eating urges?" and is assessed by the respondent on an 11-point Likert-type scale ranging from 0 (not at all) to 10 (extremely or completely). The "b" part of each question is averaged to produce a total scale score where higher scores indicate greater eating loss of control. All "b" items are responded to and scored regardless of the answer to the "a" item. The ELOCS has shown good internal consistency (α =.90). The current sample shows a lower internal reliability (α = .75).

Measures: Daily Ecological Momentary Assessment

Two surveys were designed for the purposes of Ecological Momentary Assessment (EMA): the Periodic Assessment of Stigmatizing Expereinces (PASE) and Daily Eating Survey (DES). These two surveys consist of modified items from the AAQ-W, FAAQ, WSSQ, NEQ, and ELOCS as well as some written specifically for this study. Although multiple items were included with the intention of measuring similar constructs, most items were analyzed individually since they were measuring particular facets. Using few or even single items in the analysis of EMA is common (Moskowitz & Young, 2006).

Periodic Assessment of Stigmatizing Experiences. As seen in Appendix I, the PASE was developed for the purposes of this study as a survey to be used for ecological momentary assessment (EMA), whereby the participant responds to the same items repeatedly over a period of time. Questions one and two were written specifically for this study, while the rest were adapted from items found on the AAQ-W and the WSSQ. The PASE is a 5-item survey of weight related stigmatizing experiences: Weight Stigma (item #1), Weight Discrimination (item #2), Self-Blame (item #3), Eating as Escape (item #4)

and Avoidance of Weight Distress (item #5). Questions like "I experienced **stigma** today that was related to my weight" were assessed on a Likert type scale ranging from 1 (Not at all) to 5 (Extremely so). Higher scores indicated higher levels of perceived stigmatizing experiences. Items assessing Weight Stigma and Weight Discrimination were combined into a single variable by averaging the scores, creating a new variable called Perceived Stigma.

Daily Eating Survey. As seen in Appendix J, the DES was developed for the purposes of this study as a survey to be used for EMA. The questions that comprise the DES were adapted from the AAQ-W, FAAQ, NEQ and ELOCS. The DES is an 8-item survey of various dimensions of disordered eating where each domain was measured with a single item. Three items were intended to assess psychological inflexibility: Eating as Comfort, which is using food to feel better when negative emotions arise, (item #1), Difficulty Controlling Urges, (item #3), and Intolerance of Food Thoughts (item #4). One item was intended to assess weight-related stigma, Lack of Self-Acceptance (item #2). Four items were intended to assess disordered eating: Overeating (item #8), Loss of Control (item #5), Eating Quickly (item #6), and Eating- Related Guilt (item #7). Questions one through five were taken from the AAQ-W, FAAQ and NEQ, while questions six through eight were created specifically for the DES. Questions like "How much control did you have over your eating behavior today?" are assessed on a Likert-type scale ranging from 1 (Not at all) to 5 (Complete).

Procedure

Upon consent, participants completed an online questionnaire battery including the demographics questionnaire, the AAQ-II, the AAQW, the FAAQ, the WSSQ, the

NEQ, and the ELOCS. For the next 7 days, the participants received 3 text messages every day that included a link to the PASE, and a fourth text message that included a link to the DES. To be considered a valid response, PASE and DES questionnaire responses were required to be at least thirty minutes apart. Of the possible 21 PASE and 7 DES responses per participant, the mean number of responses was 15.2 for the PASE and 6.1 for the DES. Participants who did not answer at least half of the possible PASE and DES opportunities were excluded from the study.

After their final assessment, participants were contacted by the researcher to thank them for participation, confirm the number of chances that were entered into the raffle, and review the study's purpose and hypotheses. The researcher also provided referrals for counseling and other resources for help coping with stigma.

Chapter III: Results

Data Preparation and Analytic Strategy

Items from the self-report measures were scored according to the published scoring guidelines that accompanied the various measures used. First, distributions of scores were examined along with correlational analyses between all pairs of independent and dependent variables. Next linear trends were analyzed over time for the PASE and DES data to ensure that there were no systematic changes over time. Hypotheses were tested using two different strategies: traditional regression analyses of the one-time questionnaire data and hierarchical linear modeling of the PASE and DES data. In order to examine the relationship between stigma and disordered eating (hypothesis 1), linear models were constructed to examine the extent to which stigmatizing experiences predict disordered eating by participant. In order to examine how psychological inflexibility (weight- and food-related) and self-stigma moderate the relationship between stigma and disordered eating (hypotheses 2 and 3), a series of separate mixed effect analyses were conducted examining how inflexibility or self-stigma predicts the relationship between stigma and disordered eating. In order to estimate the relationship between psychological inflexibility and self-stigma (hypothesis 4), a series of multiple regression analyses were conducted examining the extent to which inflexibility predicts self-stigma by participant. Again, these analyses were conducted with both the one-time assessments of inflexibility and self-stigma and the PASE and DES data.

Descriptive Statistics

Psychological inflexibility. Psychological Inflexibility was measured using three different measures: The Acceptance and Action Questionnaire-II (AAQ-II), Acceptance and Action Questionnaire for Weight-Related Difficulties (AAQW), and Acceptance and Action Questionnaire for Food (FAAQ). The AAQ-II is scored by summing the seven items with scores ranging from 7 to 49. Higher scores indicate higher levels of psychological inflexibility. Within this sample there was a range of 7 to 42 with a mean of 23.71. When compared to the mean of 18.53 obtained by Bond et al. (2011), this population shows slightly higher levels of psychological inflexibility, $t(51) = 3.92$, $p = .0003$.

The AAQW is scored by recoding reverse scored responses to reversed items and then summing all items. Scores on the AAQW range from 22- 154. Lower scores indicate more experiential avoidance and more psychological inflexibility with weight. Compared to the mean of 88.9 obtained by Lillis & Hayes' (2008), this population has similar levels of experiential avoidance and psychological inflexibility with weight with a sample range of 43 to 130 and a mean score of 93.27, $t(51) = 1.39$, $p = .171$.

The FAAQ is scored by summing the nine items with possible range of 9 to 54. Higher scores predict greater acceptance of one's motivations to eat. Within this sample the range was 22 to 48 with a mean score of 34.73. Compared to the mean of 28.13 obtained by Juarascio et al. (2011), this population displays more acceptance regarding their motivations to eat, $t(51) = 7.19$, $p = .0001$.

Psychological inflexibility variables (Avoidance of Weight Distress, Eating as Comfort, Difficulty Controlling Urges, and Intolerance of Food Thoughts) were also

assessed via one item on the PASE and three items on the DES. These items were analyzed separately because neither the PASE nor DES measured a singular construct as each one is comprised of three different constructs (inflexibility, stigma, and disordered eating). In addition, linear models were constructed for each participant to estimate changes in psychological inflexibility over time to ensure that no systematic changes occurred as a result of repeated measures. Means across participants and time points as well as the mean slopes and standard deviations of slopes are presented in Table 1. The distribution of slopes across participants was examined for overall trends to ensure that there were no systematic changes as a result of repeated measures. As seen in Table 1, participants reported a moderate to high degree of inflexibility. There were no systematic changes in any inflexibility variables over time.

Table 1
Means, Standard Deviations of Mean Slopes (SD_b), Mean Slopes (M_b) for Inflexibility Variables as Assessed by PASE and DES

Measures	*M*	SD_b	M_b
Avoidance Weight Distress	2.67	.18	.01
Eating as Comfort	2.40	.14	-.02
Difficulty Controlling Urges	2.25	.14	.01
Intolerance of Food Thoughts	3.21	.17	-.04

Stigma. Perceived Weight Stigma was measured using the Weight Self-Stigma Questionnaire (WSSQ). The WSSQ is scored by summing all items where higher scores indicate higher levels of fear of enacted stigma and self-devaluation. Within this sample the total mean scores ranged from 12 to 60 with a mean score of 42.90. Compared to the results of Lillis et al., (2010) with a mean score of 26.46, this population showed much higher levels of self-stigma; $t(51) = 12.04$, $p = .0001$.

Stigma was also assessed via PASE and DES. Three questions assessed Perceived Stigma, Self-Blame and Lack of Self-Acceptance were analyzed separately to ensure that there were no systematic changes as a result of repeated measures. In addition, linear models were constructed for each participant to estimate changes in stigma and self-stigma over time. Means across participants and time points as well as the mean slopes and standard deviations of slopes are presented in Table 2. The distribution of slopes across participants was examined for overall trends. As seen in Table 2, participants reported a low to moderate degree of stigma. There were no changes in stigma over time as assessed by PASE or DES.

Table 2
Means, Standard Deviations of Mean Slopes (SD_b), Mean Slopes (M_b) for Stigma Variables as Assessed by PASE and DES

Measures	*M*	SD_b	M_b
Self-Blame	2.10	.12	.01
Lack of Self-Acceptance	1.87	.13	-.01
Perceived Stigma	1.46	.30	.06

Disordered eating. Disordered eating was measured using three different self-report measures: The Night Eating Questionnaire (NEQ), the Eating Loss of Control Scale (ELOCS) and the Daily Eating Survey (DES). The NEQ is scored by reverse scoring responses to reversed items and then summing thirteen of the 17 items. The NEQ has a possible score range from 0 to 68 where higher scores indicate higher severity in symptoms related to Night Eating Disorder. The sample mean was 30.12 with scores ranging from 18 to 47. When compared to Allison et al. (2008) mean of 33.1, this population reported slightly less severe night eating symptoms, $t(51) = -3.03$, $p = .0039$.

The Eating Loss of Control Scale (ELOCS) is comprised of 18 questions with two parts. Part A assesses the frequency of a feeling or behavior and Part B assesses the degree to which the participant experienced the feeling or behavior. The ELOCS is scored by reverse scoring responses to reversed items before taking the average of the responses to the Part B questions such that higher scores indicate greater loss of control with regards to eating. The possible scores range from 0 to 10. The sample mean was 5.29 with a range of 1.6 to 9.05. When compared to Blomquist et al. (2014) mean of 6.55, this population reported less eating loss of control, $t(51) = -4.49$, $p = .0001$.

Disordered eating was also assessed via PASE and DES. Five questions assessed various dimensions of disordered eating separately: Overeating, Loss of Control, Eating Quickly, Eating as Escape and Eating-related Guilt. In addition, linear models were constructed for each participant to assess changes in disordered eating over time. Means across participants and time points as well as mean slopes and standard deviations of slopes are presented in Table 3. The distribution of slopes across participants was examined for overall trends. As seen in Table 3, participants reported a low to moderate degree of disordered eating. There were no changes in disordered eating over time as assessed by PASE or DES.

Table 3
Means, Standard Deviations of Mean Slopes (SD_b), Mean Slopes (M_b) for Disordered Eating Variables as Assessed by PASE and DES

Measures	*M*	SD_b	M_b
Overeating	1.94	.29	-.01
Loss of Control	2.78	.23	.03
Eating Quickly	2.30	.24	-.05
Eating as Escape	1.83	.15	.01
Eating-Related Guilt	2.72	.24	-.13

Correlational analyses. Relationships amongst all variables as measured by full questionnaires were examined through correlational analyses. Strong significant positive correlations (r = .51 to .86) were found between inflexibility and stigma variables, eating variables and BMI, and stigma and eating variables. Moderate significant positive correlations (r = .39 to .43) were found between food inflexibility and stigma, food inflexibility and eating variables, BMI and weight inflexibility, BMI and self-stigma, BMI and eating variables. Two weak correlations (r < .2) were found between Loss of Control and BMI and Loss of Control and Food Inflexibility. Correlational analyses also provided an initial test of hypothesis 4 that an increase in inflexibility would predict an increase in self-stigma. As predicted, increased scores on AAQ-II, AAQ-W and FAAQ were related to self-stigma (See Table 4).

Table 4
Summary of Intercorrelations, Means, and Standard Deviations for Inflexibility, Stigma, and Eating Variables as Assessed by Initial Questionnaire

Variables	1	2	3	4	5	6	7
1. AAQ-II	--						
2. AAQ-W	.75***	--					
3. FAAQ	.42**	.41**	--				
4. WSSQ	.72***	.86***	.43**	--			
5. NEQ	.62***	.61***	.39**	.53***	--		
6. ELOCS	.53***	.68***	-.02	.61***	.42**	--	
7. BMI	.51**	.50**	.50**	.53***	.42**	.11	--
M	23.71	93.27	34.73	42.90	30.12	5.29	41.15
SD	9.42	22.48	6.55	9.75	7.03	2.01	7.81

*p < .05, **p < .01, ***p < .001
Note. AAQ-II = Acceptance and Action Questionnaire II; AAQ-W = Acceptance and Action Questionnaire for Weight-Related Issues; FAAQ = Acceptance and Action Questionnaire for Food; WSSQ = Weight Self-Stigma Questionnaire; NEQ = Night Eating Questionnaire; ELOCS = Eating Loss of Control Scale; BMI = Body Mass Index

Regression Modeling

Predicting disordered eating from perceived stigma. A simple regression analysis was performed using the initial questionnaire data to test the hypothesis that perceived stigmatizing experiences predict disordered eating. Perceived stigmatizing experiences as measured by the WSSQ were found to significantly predict disordered eating as measured by the ELOCS ($p = .005$) and by the NEQ ($p = .03$) such that increases in weight-related stigmatizing experiences predicted increases in disordered eating.

Using ecological momentary assessment measures (PASE and DES), an individual regression modeling procedure was used to test the hypothesis that perceived stigmatizing experiences predicted disordered eating at the individual level. This strategy allowed for the analysis of variance in outcome variables (disordered eating variables) when the predictor variables (perceived stigma) vary over hierarchical levels. For each disordered eating variable measured by PASE (Eating as Escape), and DES (Loss of Control, Eating as Escape and Overeating) an individual linear model was created predicting disordered eating from perceived stigma. The distribution of individual slopes from these models was then tested against a null hypothesis of a slope of zero. As seen in Table 5, the relationship between Perceived Stigma and Eating as Escape was significant ($p = .01$), such that, on average, an increase in perceived stigmatizing experiences predicted an increase in eating to escape from negative emotions (See Figure 1). Perceived Weight Stigma also approached significance as a predictor of Loss of Control ($p = .10$) and Eating Quickly ($p = .09$), such that an increase in perceived stigmatizing experiences predicted an increase in loss of control and a decrease in eating quickly.

Table 5
Distribution of Slopes Predicting Disordered Eating from Perceived Stigma as Assessed by PASE and DES

Variables	M_b	SD_b	t	p
Overeating	.41	2.15	1.27	.21
Loss of Control	.37	1.50	1.67	.10
Eating Quickly	-.40	1.54	-1.73	.09
Eating as Escape	.38	.94	2.71***	.01
Eating-Related Guilt	-.04	1.92	-.14	.89

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

Note: The t-test evaluated the null hypothesis that the mean of the slopes is equal to zero.

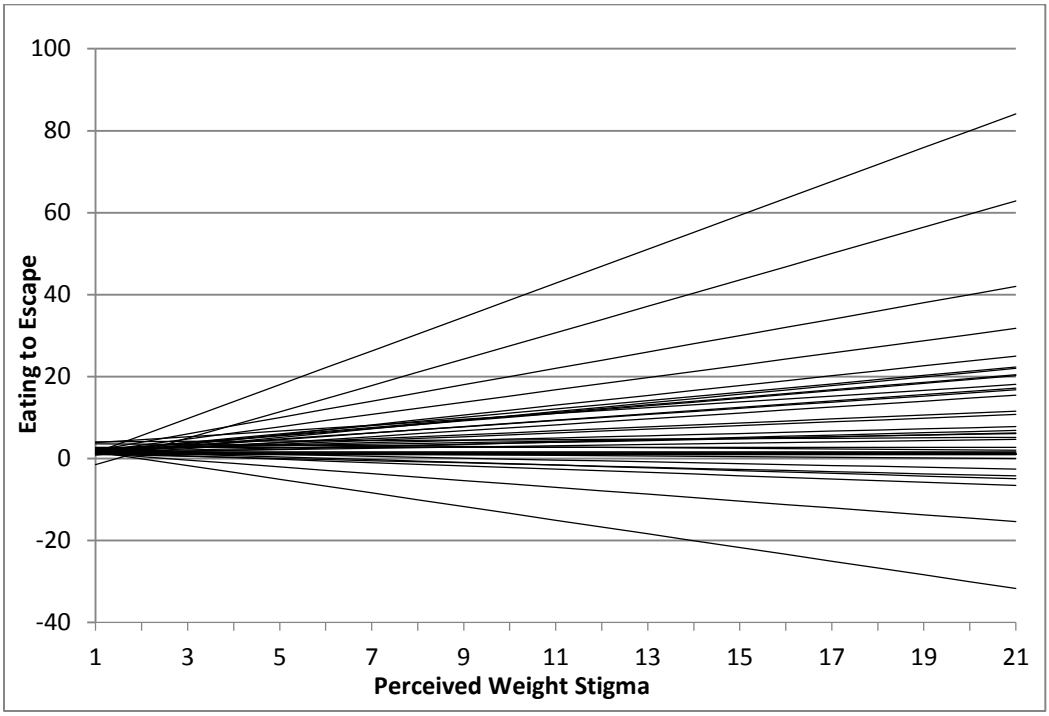

Figure 1: Linear Trend by Participant: Eating as Escape Predicted by Perceived Stigma
Note: The heavy dark line represents the mean slope.

Predicting disordered eating from perceived stigma and inflexibility. To test the potential moderating effects of weight and food inflexibility on the relationship between perceived stigma and disordered eating, a series of linear regression analyses were conducted using the initial questionnaire data. All variables were standardized prior to analysis. The contribution of each factor to the regression model was calculated after

controlling for the contribution of all other factors. As seen in Table 6, there were no significant interactions found. However, weight self-stigma predicted night eating after accounting for food inflexibility (p = .04). Weight inflexibility predicted eating loss of control after accounting for weight self-stigma (p = .04) while weight self-stigma predicted eating loss of control after accounting for food inflexibility (p = .003).

Table 6
Regression Analysis of Disordered Eating as Predicted by Perceived Stigma and Weight-Related Inflexibility as Assessed by Initial Questionnaires

Variable	β	SE	t	p
NEQ				
AAQ-W	.05	.35	.14	.89
WSSQ	.44	.37	1.2	.24
AAQ-W x WSSQ	.24	.21	1.1	.28
NEQ				
FAAQ	-.18	.19	-.95	.35
WSSQ	.43	.20	2.21	.04
FAAQ x WSSQ	-.06	.21	-.29	.77
ELOCS				
AAQ-W	.64	.29	2.2	.04
WSSQ	.04	.30	.15	.88
AAQ-W x WSSQ	.18	.18	1.02	.32
ELOCS				
FAAQ	-.11	.17	-.63	.53
WSSQ	.60	.18	3.4	.003
FAAQ x WSSQ	.24	.19	1.3	.21

Note: All variables were standardized prior to analysis

In order to test a potential moderating effect of inflexibility on the relationship between perceived stigma and disordered eating as measured using PASE and DES data, a series of regression analyses were conducted using time one inflexibility scores (AAQ-II, AAQW, and FAAQ) to predict the slopes estimating the relationships between disordered eating and perceived stigma from inflexibility scores. As seen in Table 7, only two models approached significance: Overall Inflexibility as a moderator of the relationship between Perceived Stigma and Overeating (p = .07) and Weight Inflexibility

as a moderator of the relationship between Perceived Stigma and Overeating (p = .07). As overall and weight inflexibility increased there was a trend towards a stronger positive relationship between overeating and perceived stigma.

Table 7
Distribution of Slopes Predicting the Relationship between Disordered Eating and Perceived Stigma from Inflexibility Variables as Assessed by Initial Questionnaire

	AAQ-II				AAQ-W				FAAQ			
Potentially Moderated Relationship	*β*	*SE*	*t*	*p*	*β*	*SE*	*t*	*p*	*β*	*SE*	*t*	*p*
Perceived Stigma & Overeating	.04	.02	1.86	.07	.02	.01	1.85	.07	.02	.03	.56	.58
Perceived Stigma & Loss of Control	-.01	.03	-.48	.63	.01	.01	.94	.35	.01	.04	.18	.85
Perceived Stigma & Eating Quickly	.04	.03	1.47	.15	. 01	.01	1.03	.31	-.04	.04	-1.12	.27
Perceived Stigma & Eating as Escape	-.001	.02	-.06	.95	-.01	.01	1.57	.12	.03	.02	1.21	.23
Perceived Stigma & Eating-Related Guilt	.03	.03	.92	.36	.01	.01	.73	.47	-.02	.04	-.35	.73

Predicting disordered eating from perceived stigma and self-stigma. The potential moderating effects of self-stigma, as measured by the Self-Devaluation subscale of the WSSQ, on the relationship between perceived stigma, as measured by the Fear of Enacted Stigma subscale of the WSSQ, and disordered eating were tested. In order to do this a series of linear regression analyses were conducted using the initial questionnaire data. All variables were standardized prior to analysis. The contribution of each factor to the regression model was calculated after controlling for the contribution of all other factors. As seen in Table M1 (See Appendix M), no significant relationships were seen although Eating Loss of Control and the Self-Stigma dimension of Self-Devaluation approached significance ($p = .08$).

In order to test a potential moderating effect of self-stigma on the relationship between perceived stigma and disordered eating, regression analyses using PASE and DES data were conducted predicting individual slopes from self-stigma scores. No significant relationships were observed (See Table M2 in Appendix M).

Predicting self-stigma from inflexibility. Simple regression analyses were conducted using the initial questionnaire data to determine if measures of inflexibility predicted self-stigma. As seen in Table 8, overall inflexibility, as measured by AAQ-II, predicted self-devaluation ($p = .004$) and fear of enacted stigma ($p < .0001$) as measured by WSSQ. Weight inflexibility, as measured by AAQ-W, predicted self-devaluation ($p < .0001$) and fear of enacted stigma ($p < .0001$) as measured by WSSQ. Food inflexibility did not predict self-stigma on either subscale.

Table 8
Regression analysis predicting self-stigma from psychological inflexibility as Assessed by Initial Questionnaire

	Self-Devaluation				Fear of Enacted Stigma			
	β	*SE*	*t*	*p*	*β*	*SE*	*t*	*p*
AAQ-II	.23	.07	3.1	.004	.37	.06	5.9	<.0001
AAQ-W	.14	.03	5.6	<.0001	.17	.02	7.49	<.0001
FAAQ	.05	.12	.47	.64	.17	.17	1.41	.17

Using ecological momentary assessment data, an individual regression modeling procedure was used to test the hypothesis that psychological inflexibility predicted self-stigma. For each inflexibility variable (i.e., Avoidance of Weight Distress, Eating as Comfort, Difficulty Controlling Urges, and Intolerance of Food Thoughts) measured by PASE and DES, an individual regression model was created predicting self-stigma (Self-Blame and Lack of Self-Acceptance) from psychological inflexibility. The distribution of individual slopes from these models was then tested against a null hypothesis of a slope of zero. As seen in Table 9, there were two models found to significantly predict self-stigma from one of the dimensions of psychological inflexibility. Avoidance of Weight-related Distress predicted Self-Blame (p = .04) and Eating as Comfort predicted Lack of Self-Acceptance (p = .04). In both cases, as inflexibility increased so did self-stigmatization.

Table 9
Distribution of slopes predicting self-stigma from psychological inflexibility as Assessed by PASE and DES

	Self-Blame				Lack of Self-Acceptance			
	M_b	SD_b	*t*	*p*	M_b	SD_b	*t*	*p*
Avoidance of Weight Distress	.10	.30	2.14	.04	.02	.40	.26	.80
Eating as Comfort	.02	.22	.71	.48	.12	.38	2.12	.04
Difficulty Controlling Urges	.02	.26	.55	.59	.04	.42	.60	.55
Intolerance of Food Thoughts	-.003	.25	-.08	.93	-.02	.31	-.34	.74

Chapter IV: Discussion

There is a worldwide obesity epidemic that affects millions of lives every day. Unfortunately, the public attitude towards the obese focuses more on negative stereotypes (e.g., undisciplined, ugly, stupid, and lazy) than on the underlying psychological components that lie at the heart of the struggle. Negative stereotypes like these have an effect upon the way the obese think about themselves and may lead to self-stigmatization, which in turn may interfere with a person's attempt to gain control of their health and emotional well-being when eating is used to relieve the associated distress. The degree to which an obese individual engages in disordered eating in response to stigmatization may be attributable, at least in part, to psychological processes like psychological flexibility.

The purpose of this study was to investigate the relationships among stigmatizing experiences, self-stigma, disordered eating and psychological inflexibility in an obese population, with particular emphasis on the evaluation of psychological inflexibility as a moderator of the impact of stigmatizing experiences on disordered eating. By using ecological momentary assessment we were able to collect data provided by the participants regarding their current experience.

Overall Results

Previous research suggests that stigmatizing experiences result in increased caloric consumption in an attempt to cope with stigma (Puhl & Brownell, 2006; Wott & Carels, 2010). A primary purpose of this study was to replicate this finding using not only one-time questionnaire administration, but also short-term longitudinal data collection via EMA (i.e., PASE and DES). This finding was only partially replicated. Using the initial questionnaire data, as expected, perceived stigmatizing experiences

predicted disordered eating. Using the EMA data, stigmatizing experiences did not predict overeating, eating quickly, or loss of control but did, however, predict eating as an escape. The more stigma participants experienced, the more they reported eating to escape from their emotions. This suggests that, in this study, stigmatizing experiences may have impacted participants' perception of *why* they ate, but not necessarily *how* they ate.

It also may be that the impact of stigmatizing experiences depends on participants' inflexibility. A second aim of the study was to explore psychological inflexibility as a moderator in the relationship between perceived stigma and disordered eating in an obese population. Using the initial questionnaire data, it was found that while there were no significant moderators of the relationship between perceived stigma and disordered eating, stigma did predict eating loss of control as well as night eating when other variables were controlled for. Furthermore, weight inflexibility predicted eating loss of control when weight stigma was held constant. When examining the EMA data, no evidence for psychological inflexibility as a moderator of the relationship between perceived stigma and disordered eating was found.

A third aim of this study was to explore self-stigma as a moderator in the relationship between perceived stigma and disordered eating. The results of this study suggest that self-stigma does not moderate the relationship between perceived stigma and disordered eating. This may be, in part, related to the relatively high levels of self-stigma reported by this sample. There may not have been enough variability in self-stigma for it to predict the stigma-eating relationship.

The fourth aim of this study was to examine the relationship between psychological inflexibility and self-stigma. When examining the initial questionnaire only overall inflexibility and weight inflexibility were found to significantly predict self-stigma. When examining PASE and DES a significant relationship was observed between only two pairs of inflexibility and self-stigma variables. Avoidance of weight-related distress predicted increased self-blame and eating as escape predicted a lack of self-acceptance. Difficulty controlling urges to eat or an intolerance of food-related thoughts did not predict self-stigma. This suggests first that efforts to avoid painful thoughts or feelings about weight, in any form, may contribute specifically to the self-blame aspect of stigma (i.e., blaming oneself for others' judgments). It also suggests that eating to escape pain, of any sort, may contribute specifically to the lack of self-acceptance aspect of stigma.

The current study was also concerned with examining the relative importance of different inflexibility variables with regards to stigma and disordered eating. Unlike overall and weight-related inflexibility, food inflexibility did not moderate any relationships between perceived stigma and disordered eating variables. Food inflexibility was also correlated only with night eating and self-stigma, and was unrelated to eating loss of control. All in all, the data seemed to suggest that food inflexibility was less important than overall or weight related inflexibility for predicting self-stigma, predicting disordered eating, or moderating the relationship between stigma and disordered eating. This was observed both with regard to the questionnaire assessment of food inflexibility (FAAQ) and with regard to PASE and DES measures (Controlled by Urges and Intolerance of Food Thoughts). It may be that efforts to curb or ignore food-

related thoughts and feelings are not as relevant to disordered eating or stigma in an overweight sample that is not seeking weight-loss. The current sample demonstrated more flexibility than the original undergraduate sample used with the FAAQ and those where the relations between food-related inflexibility and disordered eating have been observed (Juarascio et al., 2011).

Limitations

Due to limitations of the characteristics of the sample, it is difficult to generalize the conclusions that were obtained. First, the analyses were based upon a small sample size. This is problematic because smaller sample sizes restrict power (i.e., increase the likelihood that type II errors will occur). As a result, it is possible that some analyses that were not found to be significant were actually underpowered. Therefore, these findings should be replicated with a larger sample size.

By far, the more effective recruitment method was through social media. Over a period of four weeks, only four potential participants expressed interest in the study via the bariatric clinic, while 71 potential participants expressed interest in the study via social media. Of those four bariatric clinic patients, only two consented to participate while 50 social media recruits consented. Based on feedback from participants, half way through data collection the recruitment method was altered to include the option of having the link to consent and begin the study emailed instead of receiving a phone call. Participants reported being nervous that the phone call would include a discussion about their weight, which they found to be highly aversive. The inclusion of the new option proved to be successful, with more participants opting to be emailed and actually participating than those who had opted to be called but did not respond to the phone calls.

Future research regarding weight issues might gain the largest sample sizes by avoiding direct contact by telephone.

While most research in this area uses clinical samples, the majority of participants in this study were not identified as seeking treatment for weight difficulties. Although the current study was not comprised of the typical clinical group, the sample may not be representative of typical overweight individuals. First, there was substantial lack of diversity. Of the 52 participants, all were Caucasian and predominately female so it was impossible to determine if there were differences due to gender and culture. In addition, the study's participants exhibited fewer problems with loss of control around eating, and less food inflexibility than normative samples, suggesting that this sample showed fewer food-related difficulties than most overweight individuals. This may also be an artifact of recruitment, such that participants had to be willing to participate in a fairly involved study about a likely distressing topic.

The second limitation involves missing responses for the EMA surveys. Each participant had the opportunity to complete 21 PASE questionnaires and 7 DES questionnaires but the mean number of PASE surveys completed was 15.2 and the DES was 6.1. Because linear models were based on individual data, some of those individual models were more unstable due to fewer numbers of observations. In addition, 67% of participants responded with the same answer every day on at least one item. This created a slope of zero for all individual regression models including that variable, making it more difficult for any relationship between variables to be detected. It is unclear whether these individuals' responding was valid. It's possible that repetitive responding would decrease by changing the order of the questions over several different administrations.

There were also several design elements that may have been problematic. While participants were reminded that the questions were asking them to respond about the time since they received the last study text message, this was not always evident in the question's text. For example, question number 3 on the DES was "My eating urges control me," making it unclear if the participant was responding to their current experiences or more general impressions. In the future, EMA items should be carefully modified to ensure that participant's answers are based upon their most recent experiences (e.g., "My eating urges controlled me today").

Finally, despite the use of EMA, conclusions are limited by the nature of the study as self-report, correlational design. First, self-report is only as valid as participants are willing and able to accurately report their behavior and experiences. This study employed EMA surveys in an attempt to improve the validity of these reports by reducing error associated with retrospective accounts. In addition, anonymity was ensured to improve willingness to report potentially embarrassing behavior or experiences. Still, some variables of interest in this study present a challenge for self-report simply because of their nature. Valid reports of inflexibility, for example, rely on participants being able to accurately discern both their thoughts and feelings, and their responses to thoughts and feelings. Future research might consider assessments of inflexibility that are not self-report. Second, despite employing repeated measurements, conclusions are still limited to simply suggesting that relationships exist between two variables. No causal conclusions can be drawn. Future research might manipulate inflexibility or stigma variables in a controlled examination of their impact on disordered eating.

Future Directions

In addition to addressing limitations of the current study, future research might extend the current study in one of several different directions. Psychological inflexibility has been described in terms of six interdependent components. Future research might explore different aspects of psychological inflexibility on disordered eating, self-stigma, and on the stigma-eating relationship (Hayes et al., 2006). For example, experiential avoidance has been suggested to be of primary importance in maintaining disordered eating (Puhl et al., 2007). Cognitive fusion is a closely related construct that involves the dominance of rigid ideas. For example, an obese individual might be fused with a rule that overweight people are worthless or with the belief that negative social interactions are attributable to stigma. Future research might directly assess fusion around overweight or social interactions as a potential moderator of the stigma-eating relationship. In addition, another important aspect of psychological inflexibility involves difficulty choosing a sense of purpose and establishing patterns of committed action to serve that purpose (Hayes et al., 2006). Future research might include more direct measures of valued living and committed action while addressing the roles of avoidance.

Future research might replicate the current study in different populations of interest such as individuals who are actively dieting, individuals seeking medically assisted weight loss, candidates preparing for bariatric surgery, and post-surgery patients. It might be particularly interesting to extend the EMA data collection over the course of a diet, a course of treatment, preparation for surgery, or recovery from surgery. It could be that flexibility could predict the extent to which stigma interferes with weight loss efforts, something not directly assessed in this study.

Future studies might also consider social interactions more broadly. Obese individuals are at greater risk for limited mobility, which in turn limits their social interactions. An important aspect of internalization of obesity stigma involves the sense that the individual deserves the poor treatment they receive from others. A high number of positive social interactions relative to stigmatizing ones could buffer the impact of stigmatizing experiences. It's also possible that social skills might play a role in the social interactions of the obese. Measuring social experiences and activities more broadly might allow for improved understanding of the role of the social context in disordered eating amongst the obese.

Implications and Conclusion

This study is among the first to consider relationships among stigma, psychological inflexibility, and disordered eating, and the first to consider psychological inflexibility as a moderator of the stigma-eating relationship. Previous research demonstrated the importance of psychological inflexibility in predicting both emotional eating and uncontrolled eating (Nevanperä, Lappalainen, Kuosma, Hopsu, Uitti, & Laitinen, 2013). The results of this study suggest that while perceived stigmatizing experiences may result in emotional eating, these experiences only predict objective problematic eating amongst those high in overall or weight-related inflexibility. This study also suggests that food and weight-related inflexibility contributes significantly to the internalization of stigma amongst the obese.

Lillis, et al. (2009) used a six hour acceptance based intervention to target weight related stigma and psychological distress among an obese population. At three month follow up participants showed improvements in weight related stigma, increased quality

of life, improved tolerance for psychological distress and had maintained a 5% weight loss. The results of this study suggest that similar flexibility-based interventions could be designed specifically to reduce self-stigma and the impact of stigmatizing experiences on disordered eating. Such an intervention might train flexibility-based coping skills to replace emotional eating, while building weight-related flexibility to decrease the impact of stigma on eating behavior.

Currently 1.4 billion people across the globe are classified as overweight, and 500 million as obese. Overweight and obesity come with a range of physical and psychological difficulties, which are often complicated and maintained by the social stigma surrounding their weight struggles. For those who are psychologically inflexible, stigmatizing experiences are likely to result in unhealthy coping strategies that further exacerbate their emotional and physical struggle with weight. Interventions that teach overweight individuals to fully experience their weight-related distress and reduce maladaptive emotional eating behaviors to escape pain may offer a way forward that both honors experience and brings hope for a change.

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Appendix A: Demographic Questionnaire

The questions on this page request personal information used to compare different groups of people. Please describe yourself honestly by filling in the blanks, or checking your response in the box.

Gender: (please check one) _____Male _____Female

Age: _____

Weight(lbs.): _____ Height(feet and inches): _____

Ethnicity: (please check one)

_____White _____Black _____Hispanic _____Asian _____Other

_____

Appendix B: Acceptance and Action Questionnaire-II (AAQ-II)

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1	2	3	4	5	6	7
never true	very seldom true	seldom true	sometimes true	frequently true	almost always true	always true

1.	My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
2.	I'm afraid of my feelings.	1	2	3	4	5	6	7
3.	I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
4.	My painful memories prevent me from having a fulfilling life.	1	2	3	4	5	6	7
5.	Emotions cause problems in my life.	1	2	3	4	5	6	7
6.	It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
7.	Worries get in the way of my success.	1	2	3	4	5	6	7

Appendix C: Acceptance and Action Questionnaire-W (Truth Scale)

Below you will find a list of statements. Please ***rate the truth of each statement as it applies to you*** by marking the appropriate box to the right. Use the scale provided to make your choice.

	Never True (1)	**Very seldom true (2)**	**Seldom true (3)**	**Sometimes true (4)**	**Frequently true (5)**	**Almost always true (6)**	**Always true (7)**
1. It's OK to feel fat.	☐	☐	☐	☐	☐	☐	☐
2. When I have negative feelings, I use food to make myself feel better.	☐	☐	☐	☐	☐	☐	☐
3. I try to suppress thoughts and feelings that I don't like about my body or weight by just not thinking them.	☐	☐	☐	☐	☐	☐	☐
4. I am not in control of what I eat.	☐	☐	☐	☐	☐	☐	☐
5. I try hard to avoid feeling bad about my weight or how I look.	☐	☐	☐	☐	☐	☐	☐

6. I am in control of how much physical activity I do.	☐	☐	☐	☐	☐	☐	☐
7. When I evaluate my weight or my appearance negatively, I am able to recognize that this is just a reaction, not an objective fact.	☐	☐	☐	☐	☐	☐	☐
8. In order to eat well and do physical activity, I need to feel like it.	☐	☐	☐	☐	☐	☐	☐
9. I need to feel better about how I look in order to live the life I want to.	☐	☐	☐	☐	☐	☐	☐
10. Other people make it hard for me to accept myself.	☐	☐	☐	☐	☐	☐	☐

Appendix D: Acceptance and Action Questionnaire-W (Believability Scale)

Imagine that the following thoughts occurred to you right now. ***How valid or believable would each be***? For each question, please check a box from 1 (not at all believable) through 7 (completely believable).

	Not at all believable (1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**Completely believable (7)**
1. If I'm overweight, I can't live the life I want to.	☐	☐	☐	☐	☐	☐	☐
2. If I feel unattractive, there is no point in trying to be intimate.	☐	☐	☐	☐	☐	☐	☐
3. If I gain weight, that means I have failed.	☐	☐	☐	☐	☐	☐	☐
4. I'm in control of my eating behavior.	☐	☐	☐	☐	☐	☐	☐
5. I don't have what it takes to be healthy for life.	☐	☐	☐	☐	☐	☐	☐
6. My eating urges control me.	☐	☐	☐	☐	☐	☐	☐
7. I need to get rid of my eating urges to eat better.	☐	☐	☐	☐	☐	☐	☐
8. I am a stable person	☐	☐	☐	☐	☐	☐	☐
9. If I eat something bad, the whole day is a waste.	☐	☐	☐	☐	☐	☐	☐
10. I should be ashamed of my body.	☐	☐	☐	☐	☐	☐	☐
11. I need to avoid social situations where people might judge me.	☐	☐	☐	☐	☐	☐	☐
12. I will always be overweight	☐	☐	☐	☐	☐	☐	☐

Appendix E: Acceptance and Action Questionnaire for Food

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1 Very Seldom True	2 Seldom True	3 Sometimes True	4 Frequently True	5 Almost Always	6 Always True

1.	I continue to eat a healthy diet, even when I have the desire to overeat or make poor eating choices	**1**	**2**	**3**	**4**	**5**	**6**
2.	It's OK to experience cravings and urges to overeat, because I don't have to listen to them	**1**	**2**	**3**	**4**	**5**	**6**
3.	It's necessary for me to control my food urges in order to control my eating	**1**	**2**	**3**	**4**	**5**	**6**
4.	I need to concentrate on getting rid of my urges to eat unhealthily	**1**	**2**	**3**	**4**	**5**	**6**
5.	I don't have to overeat, even when I feel like I want to overeat	**1**	**2**	**3**	**4**	**5**	**6**
6.	Controlling my urges to eat unhealthily is just as important as controlling my eating	**1**	**2**	**3**	**4**	**5**	**6**
8.	My thoughts and feelings about food must change before I can make changes in my eating	**1**	**2**	**3**	**4**	**5**	**6**
9.	Despite my cravings for unhealthy foods, I continue to eat healthily	**1**	**2**	**3**	**4**	**5**	**6**
10.	Before I can make any important dietary changes, I have to get some control over my food urges	**1**	**2**	**3**	**4**	**5**	**6**

Appendix F: Weight Self-Stigma Questionnaire (WSSQ)

1	2	3	4	5
Completely Disagree	Disagree	Neither Agree nor Disagree	Agree	Completely Agree

1. I'll always go back to being overweight	**1**	**2**	**3**	**4**	**5**
2. I caused my weight problems	**1**	**2**	**3**	**4**	**5**
3. I feel guilty because of my weight problems	**1**	**2**	**3**	**4**	**5**
4. I became overweight because I'm a weak person	**1**	**2**	**3**	**4**	**5**
5. I would never have any problems with weight if I were stronger	**1**	**2**	**3**	**4**	**5**
6. I don't have enough self-control to maintain a healthy weight	**1**	**2**	**3**	**4**	**5**
7. I feel insecure about others' opinions of me	**1**	**2**	**3**	**4**	**5**
8. People discriminate against me because I've had weight problems	**1**	**2**	**3**	**4**	**5**
9. It's difficult for people who haven't had weight problems to relate to me	**1**	**2**	**3**	**4**	**5**
10. Others will think I lack self-control because of my weight problems	**1**	**2**	**3**	**4**	**5**
11. People think that I am to blame for my weight problems	**1**	**2**	**3**	**4**	**5**
12. Others are ashamed to be around me because of my weight	**1**	**2**	**3**	**4**	**5**

Appendix G: Night Eating Questionnaire (NEQ)

Directions: Please circle ONE answer for each question.

1. How hungry are you usually in the morning?

0	1	2	3	4
Not at all	A little	Somewhat	Moderately	Very

2. When do you usually eat for the first time?

0	1	2	3	4
Before 9 am	9:01 - 12 pm	12:01 - 3 pm	3:01 - 6 pm	6:01 or later

3. Do you have cravings or urges to eat snacks after supper, but before bedtime?

0	1	2	3	4
Not at all	A little	Somewhat	Very much so	Extremely so

4. How much control do you have over your eating between supper and bedtime?

0	1	2	3	4
None at all	A little	Some	Very much	Complete

5. How much of your daily food intake do you consume *after* suppertime?

0	1	2	3	4
0% (none)	1- 25% (up to a quarter)	26 - 50% (about half)	51 - 75% (more than half)	76 - 100% (almost all)

6. Are you currently feeling blue or down in the dumps?

0	1	2	3	4
Not at all	A little	Somewhat	Very much so	Extremely

7. When you are feeling blue, is your mood lower in the:

0	1	2	3	4
Early Morning	Late Morning	Afternoon	Early Evening	Late Evening /Nighttime

8. How often do you have trouble getting to sleep?

0	1	2	3	4
Never	Sometimes	About half the time	Usually	Always

9. Other than only to use the bathroom, how often do you get up at least once in the middle of the night?

0	1	2	3	4
Never	Less than once a week	About once a week	More than once a week	Every night

**********IF 0 on #9, PLEASE STOP HERE**********

10. Do you have cravings or urges to eat snacks when you wake up at night?

0	1	2	3	4
Not at all	A little	Somewhat	Very much so	Extremely So

11. Do you need to eat in order to get back to sleep when you awake at night?

0	1	2	3	4
Not at all	A little	Somewhat	Very much so	Extremely So

12. When you get up in the middle of the night, how often do you snack?

0	1	2	3	4
Never	Sometimes	About half the time	Usually	Always

**********IF 0 on #12, PLEASE SKIP TO #15**********

13. When you snack in the middle of the night, how aware are you of your eating?

0	1	2	3	4
Not at all	A little	Somewhat	Very much so	Completely

14. How much control do you have over your eating while you are up at night?

0	1	2	3	4
None at all	A little	Some	Very much	Complete

15. How long have your current difficulties with night eating been going on?

_____months _____years

16. Is your night eating upsetting to you?

0	1	2	3	4
Not at all	A little	Somewhat	Very much so	Extremely

17. How much has your night eating affected your life?

0	1	2	3	4
Not at all	A little	Somewhat	Very much so	Extremely

Appendix H: Eating Loss of Control Scale

1a. During the past four weeks, how many times did you go out of your way to get the food you were craving?										
1b. On average, during these times, how much did you go out of your way to get the food you were craving?										
# of Times_____										
0	1	2	3	4	5	6	7	8	9	10
Not at All Out of My Way										Completely Out of My Way
2a. During the past four weeks, how many times did you feel helpless to control your eating urges?										
2b. On average, during these times, how helpless did you feel to control your eating urges?										
# of Times_____										
0	1	2	3	4	5	6	7	8	9	10
Not at All Helpless										Completely Helpless
3a. During the past four weeks, how many times, before you started eating, did you make a definite decision to not control what you ate?										
3b. On average, during these times, how much control did you give up over what you ate before you started to eat?										
# of Times_____										
0	1	2	3	4	5	6	7	8	9	10
Did Not Give Up Control										Completely Gave Up Control
4a. During the past four weeks, how many times did you give in to an impulse to eat even though you were not hungry?										
4b. On average, during these eating occasions, how much did you give in to an impulse to eat though you were not hungry?										
# of Times_____										
0	1	2	3	4	5	6	7	8	9	10
Did Not Give In										Completely Gave In
5a. During the past four weeks, how many times did you ignore an interruption (such as a phone call) to keep eating?										
5b. On average, during these times, how much did you ignore the interruption (such as a phone call) to keep eating?										
# of Times_____										
0	1	2	3	4	5	6	7	8	9	10
Did Not Ignore Interruption to Keep Eating										Completely Ignored Interruption to Keep Eating
6a. During the past four weeks, how many times did you keep eating even though you thought you should stop?										
6b. On average, during these times, how much did you keep eating even though you thought you should stop?										
# of Times_____										
0	1	2	3	4	5	6	7	8	9	10
Stopped Eating										Did Not Stop Eating
7a. During the past four weeks, how many times have you eaten much more rapidly than normal?										
7b. On average, during these times, how much more rapidly than normal did you eat?										
# of Times_____										
0	1	2	3	4	5	6	7	8	9	10
No More Rapidly Than Normal for Me										Much More Rapidly Than Normal for Me

8a. During the past four weeks, how many times have you eaten until you felt uncomfortably full?

8b. On average, during these times, how uncomfortably full did you feel?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at all Uncomfortably Full										Extremely Uncomfortably Full

9a. During the past four weeks, how many times have you eaten when you haven't felt physically hungry?

9b. On average, during these times, how large was the amount of food you ate when you didn't feel physically hungry?

0- (e.g., small, like a handful of grapes or one cookie)
1-
2- (e.g., like a granola bar or snack size bag of chips)
3-
4- (e.g., moderate, like a bagel and cream cheese or 6" sandwich)
5-
6- (e.g., like a cheeseburger and small french fries or 4 brownies)
7-
8- (e.g., large, like a 12" sandwich, snack size bag of chips, and a side salad
9-
10- (e.g., unusually large, like two full meals or three main courses (3 double cheeseburgers) or eating an unusually large amount of one food or combination of foods, like a whole large cake, one whole medium pizza)

10a. During the past four weeks, how many times have you eaten alone because you have felt embarrassed about how much you were eating?

10b. On average, during these times, how embarrassed have you felt about how much you were eating when you ate alone?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at All Embarrassed										Extremely Embarrassed

11a. During the past four weeks, how many times have you felt disgusted with yourself, depressed, or very guilty while eating?

11b. On average, during these times, how disgusted with yourself, depressed, or very guilty did you feel?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at All Disgusted, Depressed, Very Guilty										Extremely Disgusted, Depressed, Very Guilty

12a. During the past four weeks, how many times have you been afraid of losing control over eating?

12b. On average, during these times, how afraid of losing control over eating have you been?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at All Afraid										Completely Afraid

13a. During the past four weeks, how many times have you felt driven or compelled to eat?

13b. On average, during these times, how driven or compelled to eat have you felt?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at All Driven or Compelled to Eat										Completely Driven or Compelled to Eat

14a. During the past four weeks, how many times have you not been able to stop eating once you've started?

14b. On average, during these times, how hard has it been to stop eating once you've started?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at All Hard to Stop										Extremely Hard to Stop

15a. During the past four weeks, how many times have you given up even trying to control your eating because you know that, no matter what, you're going to overeat?

15b. On average, during these times, how much have you given up even trying to control your eating because you know that, no matter what, you're going to overeat?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at All Given Up										Completely Given Up

16a. During the past four weeks, how many times did you feel upset by the feeling that you couldn't stop eating or control what or how much you were eating?

16b. On average, during these times, how upset were you by the feeling that you couldn't stop eating or control what or how much you were eating?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at All Upset That You Could Not Stop Eating										Completely Upset That You Could Not Stop Eating

17a. During the past four weeks, how many times could you not take your mind off the food you were craving and feel you needed to eat it in order to stop the thoughts?

17b. On average, during these times, how hard was it for you to stop thinking about the food you were craving?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at All Hard to Stop										Extremely Hard to Stop

18a. During the past four weeks, how many times have you felt out of control and eaten an unusually large amount of food (for example, eating two full meals; or eating three main courses; or eating an unusually large amount of one food or combination of foods) in a short period of time (1-2 hours)?

18b. On average, during the past four weeks, when you have eaten an unusually large amount of food (for example, eating two full meals; or eating three main courses; or eating an unusually large amount of one food or combination of foods) in a short period of time (1-2 hours), how have you felt?

# of Times_____

0	1	2	3	4	5	6	7	8	9	10
Not at All Out of Control										Completely Out of Control

Appendix I: Periodic Assessment of Stigmatizing Experiences (PASE)

Please answer the questions below by rating them on the provided scales. Keep in mind that these are asking about the time since your last study text message. "Experiencing weight related **stigma** or **discrimination** can take on many forms: being treated poorly, being made fun of, or having someone call you things that hurt your feelings all because of your weight."

Since my last response:

1) I experienced stigma today that was related to my weight.

1	2	3	4	5
Not at all	A little	Somewhat	Very much so	Extremely so

2) I feel that I was discriminated today because of my weight.

1	2	3	4	5
Not at all	A little	Somewhat	Very much so	Extremely so

3) It's my fault that others look down on me because of my weight.

1	2	3	4	
Not at all	A little	Somewhat	Very much so	Extremely so

4) I coped with feeling bad about my self by eating.

1	2	3	4	5
Not at all	A little	Somewhat	Very much so	Extremely so

5) I tried hard to avoid feeling bad about my weight or how I looked

1	2	3	4	5
Not at all	A little	Somewhat	Very much so	Extremely so

Appendix J: Daily Eating Survey (DES)

Please answer the questions below by rating them on a scale of 1-4. Keep in mind that these are asking about your entire day.

Since my last response:

1) When I have negative feelings, I use food to make myself feel better.

1	2	3	4	
Not true	A little true	True	Very true	

2) Other people make it hard for me to accept myself.				
1	2	3	4	
Not true	A little true	True	Very true	

3) My eating urges control me.				
1	2	3	4	
Not true	A little true	True	Very true	

4) My thoughts and feelings about food must change before I can make changes in				
1	2	3	4	
Not true	A little true	True	Very true	

5) How much control did you have over your eating behavior today?				
1	2	3	4	5
Not at all	A little	Somewhat	Very much so	Complete

6) I ate my food quickly today, not really paying attention to what I was eating.				
1	2	3	4	5
Not at all	A little	Somewhat	Very much so	Extremely so

7) When I ate unhealthy foods I felt guilty.				
1	2	3	4	5
Not at all	A little	Somewhat	Very much so	Extremely so

8) I ate a larger amount of food today than is usual for me.				
1	2	3	4	5
Not at all	A little	Somewhat	Very much so	Extremely so

Appendix K: Recruitment Video Script

Hello everyone! My name is Emily Squyres and I am working on my master's degree in psychology at ULL. I have always struggled with my weight, managing to lose 20 pounds only to put thirty back on, which is how at the age of 38 I now weigh over 400 pounds. Along with the typical struggles of being overweight/obese, I've also had to deal with being treated poorly just because of my weight. For example, having someone yell out of the window of a passing car "You're fat"! Being looked down upon, as if my excess flesh somehow makes me less than a human. This is what psychologists call *obesity stigma*. It's difficult to cope with stigma like this. And in turn makes it harder to get control of my issues with food and my body.

If you've also struggled with your weight then the odds are that the story I'm telling you seems familiar. As people who struggle with our weight and our relationship to food, we've all been there. The exciting thing is that I get to take all of those difficult moments and put them to good use: my master's thesis!

So, my master's thesis is a topic that's very familiar to me: I want to look at obesity stigma, how it impacts our eating habits and if there are different ways of coping with stigma that may be more or less useful. To do this I am looking for volunteers to participate in my study. To be able to participate you need just two things: a smart phone and a BMI of 30 or over.

The study will last for seven days and will require you to fill out 8 surveys at the beginning and then for the next seven days you'll receive four text messages per day that will provide you with a link to a short survey that will take 1 to 2 minutes. (Don't worry, your responses will be kept confidential and won't be linked to your name.) The exciting part is

that every time you click on the link and complete a short survey you will be entered into a raffle for one of three Amazon gift cards ($15, $50 and $75)! That means that if you complete each of the 4 surveys per day for 7 days, you could be entered 28 times into the raffle!! I like those odds!

So, if you're interested please click on the link in the Facebook post. It will take you to a brief survey. Just fill it out and within a day or two you'll receive a phone call from me so that I can briefly talk to you about the study. Thanks so much for taking the time to watch this video. I hope to be able to talk to you soon.

Appendix L: Recruitment Card

HAVE YOU EVER BEEN TREATED POORLY

THE STIGMA STUDY

- We're looking for people who have a BMI of 30 and above and have a smartphone to participate in a study about obesity stigma, eating habits and coping.
- As a participant you will be asked to complete a set of questionnaires and then for the next seven days will receive four text messages a day that will provide you with a link to a short survey.
- These short surveys should only take you 1-2 minutes to fill out.
- Every time you complete one of the short surveys, you will be entered into a raffle for one of three Amazon gift cards ($15, $50 & $75).

Appendix M: Tables

Table M1
Regression Analysis of Disordered Eating as Predicted by Perceived Stigma and Self-Stigma as Assessed by Initial Questionnaires

Variable	β	SE	t	p
NEQ				
Self-Devaluation	.23	.22	1.08	.30
Fear of Enacted Stigma	.28	.22	1.28	.21
Self-Devaluation by Fear of Enacted Stigma	.11	.22	.50	.62
ELOCS				
Self-Devaluation	.36	.20	1.86	.08
Fear of Enacted Stigma	.31	.20	1.58	.13
Self-Devaluation by Fear of Enacted Stigma	.26	.20	1.31	.20

Table M2
Self-Stigma as a Moderator of the relationship between Perceived Stigma and Disordered Eating as Assessed by PASE and DES

Variables	β	*SE*	t	p
WSSQ by Overeating	.02	.02	.98	.33
WSSQ by Loss of Control	.02	.03	.60	.55
WSSQ by Eating Quickly	.005	.03	.17	.87
WSSQ by Eating as Escape	.02	.02	1.34	.19
WSSQ by Eating-Related Guilt	.05	.03	1.59	.12

Appendix N: Consent

Consent to Participate in Research Study

Obesity Stigma, Disordered Eating and Psychological Flexibility

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Description

Many people tend to respond to those struggling with their weight with judgment instead of compassion. This is referred to as stigma. Sometimes this results in them treating an overweight person poorly, simply because of their weight. Often, this is so powerful that the overweight person will begin to judge themselves based on their weight which leads to them treating themselves poorly. This self-judgment may interfere with an overweight individuals' attempts to begin to eat healthier and exercise. We are interested in how overweight individuals are treated by the people around them and how they respond to this treatment. If you volunteer to participate, you will complete 8 online questionnaires related to how others treat you, how you feel about that treatment, how you cope with those feelings, and how you eat. Then, for the next week, you will complete a short 5-9-item survey four times a day, the links for which you will receive via text message.

Risks and Benefits

We do not anticipate any serious risks associated with being part of this project. However, some participants may be uncomfortable answering questions about their feelings regarding their eating habits and how they are treated. We wish to assure you that your name will not be associated with your questionnaire responses. There are also no direct benefits for participation except that some people enjoy answering questions thoughtfully about themselves and their experiences and some may feel satisfaction at knowing that they are helping us develop a better understanding of the relationship between stigma, coping, and eating habits.

Cost and Payments

The only cost to you for participation is your time. It should take no more than 20 minutes to complete the online questionnaires and the daily text messages should take no longer than 1 or 2 minutes per text. Each time that you receive a text message, follow the link and complete the 5-9 item surveys, you will be entered into a raffle containing three prizes, a $25 Amazon gift card, a $50 Amazon gift card and a $75 Amazon gift card.

Confidentiality

When you agree to participate, your cell phone number will be assigned as your participant number. All of your responses will be associated with this participant number instead of your name. Investigators will link your name with your number only to keep track of your participation for the raffle. No one besides the investigators will be able to link your name to your participant number. Your anonymous responses will be kept confidential and will not be linked with your name in any way. Although the results of this study may be published, no information that could identify you will be included.

Right to Withdraw

Your consent is being given voluntarily. You may refuse to participate in the entire study or any part of the study. If you decide to participate in the study, you are free to withdraw at any time without any negative effect on your relations with UL Lafayette or with the agency that referred you to the study. If you withdraw, you will still be entered into the raffle for the number of times you have already answered the daily surveys.

Institutional Review Board

IRB functions to assure that research involving human subjects is carried out in an ethical matter. If you have any questions, concerns, or reports regarding your rights as a participant of research, please contact the Chair of the UL Lafayette IRB, Dr. Nicole Müller, at (337) 482-6489.

Statement of Consent

I have read the above information. I understand that if I wish to obtain a copy of this form I can do so by clicking the link below. I also understand that I can also ask any questions and receive answers before I consent to participate in the study by also contacting Emily Squyres. I understand that by selecting the “continue to study” button I consent to participate in this study.

Appendix O: Debriefing Form

Debriefing

People who struggle with their weight often report having a difficult relationship with food. This struggle with food is often made more difficult because they also have to deal with being judged and treated badly by others because of their weight (this judgment and poor treatment is also called stigma). When a person is able to experience not just the ups of life but also the downs, while still moving toward what they find meaningful in life, they are considered to be psychologically flexible. If a person is more psychologically flexible, then they may be better able to handle this poor treatment and as a result, are better able to manage their eating behavior. In this study, we were interested in how obesity stigma may affect eating behavior. We were especially interested in how being open to the feelings that come with stigma, while focused on pursuing things that are meaningful might lessen the impact of that stigma on eating.

You completed 8 questionnaires and then four shorter questionnaires every day for a week. These questionnaires asked about how you eat, how you feel about yourself and your weight, how you are treated, and how you cope with your feelings. You may have felt uncomfortable having to pay attention to your thoughts and feelings about your weight and the way society views those with weight issues. For some people, the discomfort around weight issues can be so difficult that they would benefit from speaking to a therapist. If you are in need of assistance because of distress, you may receive free counseling by contacting the Clinic for Counseling and Personal Development at (337) 482-1018 for an appointment with a counselor.

If you have any questions or concerns about this study, please feel free to express

them with Dr. Emily K. Sandoz in person at the University of Louisiana at Lafayette, Girard Hall 202A, over the phone at (337) 482-1479, or through email at emilysandoz@louisiana.edu and with Emily Squyres, over the phone at (337) 258-4136, or through email at emmerss@gmail.com.

Squyres, Emily R. Bachelor of Science, University of Louisiana Lafayette, Spring 2011;
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Major: Psychology
Title of Thesis: Obesity Stigma, Psychological Flexibility and Disordered Eating Behavior Amongst People who are Overweight and Obese
Thesis Chair: Dr. Emily Sandoz
Pages in Thesis: 94; Words in Abstract: 298

ABSTRACT

Psychological struggle seems to be an inherent part of the human experience. Unfortunately, the public attitude towards the obese focuses more on negative stereotypes (e.g., undisciplined, ugly, stupid, and lazy) than on the underlying psychological components that lie at the heart of the struggle. Negative stereotypes like these have an affect upon the way the obese think about themselves and may lead to self-stigmatization, which in turn may interfere with a person's attempt to gain control of their health and emotional well-being when eating is used to relieve the associated distress. Many people who struggle with their weight are found to be very rigid in their thought processes regarding food. Perhaps it is not the content of food and body-related cognitions that is important, but the inflexibility with which they are held.

The current study will investigate the relationships among avoidant eating behavior, perceived stigmatization, self-stigmatization, and psychological flexibility. Participants will be recruited from a population of obese individuals who are seeking help at a bariatric clinic, and from Facebook. Participants will initially complete a packet of questionnaires on psychological flexibility, perceived stigmatization, self-stigmatization, and eating behavior online. Then for seven days they will receive four text messages a day for seven days, three of which will provide them with a link to the Periodic Assessment of Stigmatizing Experiences, and one text message providing a link to the Daily Eating Survey. It is

hypothesized that 1) Perceived stigmatizing experiences (i.e., a fear of enacted stigma from society) will predict disordered eating 2) Weight- and food-related psychological inflexibility will moderate the relationship between perceived stigmatizing experiences and disordered eating 3) Self-stigma (i.e., self-devaluation due to perceived stigmatization from society) will moderate the relationship between perceived stigmatizing experiences and disordered eating 4) Psychological inflexibility will predict increased perceived self-stigma

Biographical Sketch

Emily Squyres grew up in Lafayette, Louisiana and attended the University of Louisiana at Lafayette, where she earned a Bachelor of Science in Psychology as well as a Master of Science in Applied Psychology. She is currently living in Ruston, Louisiana with her dog and three cats, working on her doctorate in Counseling Psychology at Louisiana Tech University.