

**Drive for Thinness is Not the Same as Drive to Be Thin: On the Motivation  
for Dieting in Normal Weight Restrained Eaters and Bulimic Individuals**

A Thesis

Submitted to the Faculty

of

Drexel University

by

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in partial fulfillment of the

requirements for the degree

Master of Science in Psychology

January 2008

## **Acknowledgements**

I would like to thank my mentor, Michael R. Lowe Ph.D., for his continued support for this project. I would also like to thank the committee reviewing this thesis for their valuable feedback - Meghan L. Butryn Ph.D. and Kathryn P. Murphy-Eberenz Ph.D.

The Renfrew Center in Philadelphia, PA provided the opportunity to study a clinical sample for this project.

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**Abstract**

Drive for Thinness is Not the Same as Drive to Be Thin: On the Motivation for Dieting in Normal Weight Restrained Eaters and Bulimic Individuals

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Drive for thinness has been implicated as an etiological factor for the development of disordered eating. However, existing measures of this construct, such as the EDI-2 Drive for Thinness scale (DFT), appear to measure a desire to be *thinner*, but not the radical dieting mentality thought to contribute to the development of disordered eating. This study developed a Drive to be Thin (DTBT) scale to assess desire to be objectively thin (15% below ideal BMI); it excluded items regarding fear of fatness or avoidance of weight gain. DTBT items were judged for suitability by eating disorder experts and a Cronbach's alpha was calculated ( $\alpha=.947$ ).

The association between DTBT, DFT, and fear of fatness (GFFS) as motivations for dieting was investigated in 64 unrestrained and restrained eaters (RE&URE) identified by the Herman and Polivy Restraint Scale and 22 females with Bulimia Nervosa (BN) or EDNOS-BN. A mixed model ANOVA revealed a significant interaction between group and motivation to diet.

*DFT and GFFS* were significantly greater in REs compared to UREs, while DTBT was low in both. The traditional assumption that normal weight REs drive for thinness reflects an unhealthy need to be skinny appears to be incorrect. Instead, they appear to be motivated to diet mostly by a fear of fatness. This is



consistent with a predisposition toward weight gain in REs and our previously proposed hypothesis that restraint represents a proxy risk factor for weight gain.

On *DTBT*, BN had significantly higher scores than REs. Both *GFFS* and *DTBT* were elevated in BN, suggesting that bulimic individuals are highly motivated by both a fear of fatness and a drive to be thin, unlike REs who are only motivated by a fear of fatness. For BN, both a fear of fatness and a drive to be thin may motivate unhealthy dieting and eating disordered behavior.



## 1. Introduction

### *1.1 Evaluation of Body Image*

Body image problems are relevant to eating disorders in clinical samples and chronic dieting in non-clinical samples. Past research has linked these body image problems with motivation for dieting and disordered eating in normal weight women (Killian, Taylor, Hayward, Haydel, Wilson, Hammer, et al., 1996; Springer, Winzelberg, Perkins, & Taylor, 1999). In order to understand these motivations, it is necessary to discuss body image and its problems, and then the resulting motivation to diet. This is because body image is a multi-faceted construct which individuals can experience in a number of different ways.

Body image has been evaluated in past research from both the perceptual and the cognitive viewpoint. Perception influences how the body and related stimuli are seen and attended to by the individual. Body image perception is often conceptualized as the difference between the real and perceived size of one's body. The cognitive role is more complex because it involves the evaluation and judgment of body related stimuli. The perceptual component of body image has been evaluated mostly through body size estimation, while the cognitive component is dependent on attitude and affect about the body. There is also a third component of body image which is behavioral, and takes into account behavior oriented variables including dieting and fitness practices (Sands, 2000). For some individuals, a discrepancy arises between the perception of and cognition about the body. In these instances, there is an inconsistency between the perception of actual body size, and an individual's view of what the ideal body

should be. This may be what leads to body image disturbance and dissatisfaction, which has been shown to be the strongest predictor of eating related problems and eating disorders (Phelps, Johnston, & Augustyniak, 1999; Polivy & Herman, 2002).

### *Perception*

Individuals with dieting or eating concerns appear to filter information regarding body size and shape in a biased way because of an increased preoccupation with these stimuli, conceptualized as an attentional bias. This form of selective processing of body-size related stimuli has been studied mostly with implicit measures, where attentional bias can be studied without the subject being aware of the construct being measured. Implicit measures tap thoughts that occur automatically and are not under conscious control (Vartanian, Polivy, & Herman, 2004). The Stroop Color-Naming Task is a common technique which implicitly measures how subjects attend to certain stimuli (Mathews & McLeod, 1985). Past research has shown that if subjects are instructed to name the color of ink used to print the word and the semantic meaning of the word is incongruent to the ink color, the reaction time of the subject will be slowed. This is the result of an interference effect, where the presentation of emotionally salient material results in selective information processing and impairs the reaction time of color naming (Cooper & Fairburn, 1992). This has been used for the study of eating disorders by manipulating the emotional relevance of eating or body related words, where increased emotional content of words

impairs performance, resulting in an interference effect (Fairburn, Cooper, Cooper, McKenna, & Anastasiades, 1991).

A study by Fairburn, Cooper, Cooper, McKenna, and Anastasiades (1991) showed a difference in rate of response for food- and body- related words for participants who had anorexia nervosa or bulimia nervosa as compared to controls. Patients diagnosed with bulimia nervosa were slower to name eating, shape, and weight related words. This may be due to their selective information processing of body-size and body-shape related information, which is common in individuals with eating disorders. A control group showed normative levels of concern about eating, shape, and weight related words and did not result in a significant response-rate lag. This indicates that normative levels of concern do not significantly interfere with information processing (Fairburn et al., 1991). Another study compared anorexic and obese restrained eaters in color-naming food and body related words, where the two eating disordered groups showed an equivalent interference effect and were slower to name food and body-shape related words compared to controls (Long, Hinton, & Gillespie, 1994). One implication of Long's findings is that this attentional bias is not limited to patients with clinically diagnosed eating disorders. The same interference effect was found for a group of subclinical eating disordered individuals who scored high on measures of dietary restraint and drive for thinness (Perpina, Hemsley, Treasure, & de Silva, 1993). This indicates that there may be differences in perception for food and body related words for a number of individuals on a spectrum of eating and body-related concerns.

Subjects with bulimia nervosa are markedly different from subjects with anorexia nervosa in their perception of body size. Subjects with bulimia nervosa tend to overestimate their current body size and underestimate ideal body size; whereas subjects with anorexia nervosa have an accurate perception of their current body size (Cooper & Taylor, 1988). This observation is consistent with the fact that bulimics commonly report feeling that they are overweight despite being in the normal weight range (Williamson, Cubic, & Gleaves, 1993).

### *Cognition*

Once body-related stimuli are perceived, an individual may interpret them and make certain attributions and judgments about the stimuli. If the individual has eating and body related concerns, the interpretation of the stimuli often occurs through a cognitive distortion. Body size overestimation can be thought of as a form of cognitive judgment bias, where the extreme preference for being thin is a result of overvalued ideation of thinness (Williamson, 1996). This is believed to be one of the maladaptive cognitive biases that motivate eating disordered behavior.

Signal detection theory has been adapted to evaluate the cognitive differences of anorexic patients. This technique allows the independent measurement of sensory (perceptual) sensitivity and non-sensory response bias (cognitive). Each component is analyzed separately in the detection of body size distortion. Gardener & Moncrieff (1988) used this technique by showing anorexic subjects a distorted and normal video image of their body. The analysis showed differences between anorexic and normal subjects in their ability to detect the

body size distortion, where anorexics were likely to report an image of themselves as distorted whether or not distortion was present. However, anorexics showed no difference in sensory sensitivity. The results indicate that it is not the image which they see as distorted, but their response to an accurate image is distorted. Gardner & Bokenkamp (1996) carried out a similar investigation and found consistent results. They explain this phenomenon as anorexics being individuals who do not see a fat person in a mirror, but they respond to the image as if it were a fat person. In other words, they are seeing skinny images in the mirror but are judging the images as too big. This is consistent with the finding that anorexic individuals judge themselves to be approximately 10-15% larger than their actual size (Gardner & Bokenkamp, 1996; Skrzypek, Wehmeier, & Remschmidt, 2001).

Body dysphoria can be thought of as a severe form of cognitive judgment bias, where there is a discrepancy between the actual and ideal judgments of body size (Williamson et al., 1993). This can result from someone viewing their body as bigger than it actually is, from having an ideal body size smaller than their actual body, or both. Body dysphoria has been found to be a risk factor for developing eating disorder symptoms (Stice, Shupak-Neuberg, Shaw, & Stein, 1994), and is associated with a negative self-schema of overall body size and shape (Williamson, 1996). Body size overestimation and preference for thinness have been identified as some of the maladaptive perceptions and cognitions which are associated with eating disorder psychopathology, even in nonclinical

populations. Therefore, it is important to investigate the associations, perceptions, and judgments which may underlie or intensify these cognitions.

### *Behavioral*

The third component of body image is behavioral, which refers to the observable manifestation of body image. Eating disordered patients often engage in behaviors which lead to malnutrition, preoccupation with eating and appearance, vomiting, purging, and self-blame for failed weight loss attempts (Rosen & Ramirez, 1998). Body checking and mirroring is common, where a patient is overly aware of her body and constantly engages in self-evaluation of her body. One form of this is objectified body consciousness, where a patient places a great deal of importance on outsiders' perspective of her appearance. This usually results in large amounts of energy and time being placed into monitoring the patient's appearance (McKinley & Hyde, 1996).

### *1.2 Motivations to Diet*

The perceptual, cognitive, and behavioral problems related to body size and body image are thought to be motivated by one or both of two concerns. One of the motivations which may lead to body image problems is a drive for thinness. This drive has been defined in a number of different ways. One way of conceptualizing it is as a drive for societal standards of extreme thinness which leads to practices which are designed to achieve these ideals (Thompson & Stice, 2001). The second is a fear of fatness, which Goldfarb's Fear of Fatness Scale has defined as a fear of losing control and becoming fat (Goldfarb, Dykens, & Gerrard, 1985). Although these two motivations often co-exist to some extent



in most eating-concerned individuals, it is important to conceptualize them as separate constructs. The reason for this is that there is reason to believe that the causes and consequences of being motivated by a drive for thinness may be different than the causes and consequences of being motivated by a fear of fatness.

### *Drive for thinness*

Body image dissatisfaction is a central component of drive for thinness. When the perceived discrepancy between actual and ideal body weight exceeds a self-accepted value, it may trigger an excessive drive for thinness and lead to more intensive and frequent dieting practices (Sands, 2000). Drive for thinness has been associated with a number of problems in the self-schema of eating disordered individuals including poor body image, low self-concept and self-beliefs, and social physique anxiety (Sands, 2000). Past studies have found that bulimic individuals perceive their body size to be larger and to prefer a thinner body size, as compared to controls, and this indicates a higher level of body dissatisfaction (Williamson, Davis, & Goreczny, 1989; Cooper & Taylor, 1988). However, non-bulimic control participants also select ideal body sizes thinner than their current body size, which suggests that normal women may also prefer thinness. What distinguishes the bulimics is the extreme preference for thinness, and the extreme degree of dissatisfaction with the body. This is consistent with the observation that bulimics often report feeling overweight, even though they are often normal weight (Williamson et al., 1993).

Body image disturbances, including overestimation of actual body size and judgment of abnormally low body size as ideal are directly tied to a strong desire for thinness. Williamson argues that ideal body size is at such an extreme low for most eating disordered subjects that the resulting discrepancy between real and ideal is simply a result of anchoring the ideal at an abnormal level (1996). This could result in a pattern where the eating disordered individual is motivated to lose more and more weight in an attempt to reduce the discrepancy between real and ideal body size, because the low ideal body size is overvalued and gradually shifts lower when it is approached (Williamson, 1996). A drive for extreme thinness perpetuates this downward cycle to weigh less and become objectively thin, well below ideal body weight.

#### *Fear of fatness*

In contrast, an argument exists that it may be fear of fatness which motivates the ideal body size to be anchored at such a low point (Williamson, 1996). Fear of weight gain has been thought to be responsible for the extreme sensitivity to changes in body size, including minute amounts of weight change, shown by eating disordered individuals (Vitousek & Hollon, 1990). This fear of 'fatness' may anchor the individual's preferred weight below their suggested weight in an effort to avoid 'fatness' by motivating the individual to lose further weight (Williamson, 1996; Hsu, 1982).

Baker, Williamson, and Sylve (1995) found that fatness related words were more salient to high body-dysphoric subjects, as compared to thinness related words. This study showed fatness- and thinness-related words to

subjects through a video monitor. Free word recall data showed a higher frequency of fatness related word recall. Williamson theorizes that this is the result of a judgment bias, where the high body-dysphoric subjects were more readily able to associate themselves with fatness as opposed to thinness (1996). A similar study found that eating disorder patients apply a fatness interpretation to recall of ambiguous sentences, as opposed to control subjects who apply a thinness interpretation (Jackman, Williamson, Netemeyer, & Anderson, 1995).

### *1.3 Body Image Concerns and Disordered Eating*

Body image is highly relevant to both clinical and non-clinical populations. Body dissatisfaction has been thought to lead to dieting practices and disordered eating. The restrained eating and dieting which has been associated with body image concerns is thought to be problematic in both non-clinical and clinical groups. In the next section, two groups for whom body image dissatisfaction is particularly relevant will be discussed. One is normal weight restrained eaters, a group that is viewed by some researchers (Polivy & Herman, 1985) as representing an analogue of bulimia nervosa. The other group is comprised of individuals diagnosed with bulimia nervosa.

Discussion of restrained eating and eating disorders will focus primarily on women. This is because men have distinctly different types of body image concerns and patterns of disordered eating (Schneider & Agras, 1987). In addition, the vast majority of those with eating disorders are comprised of women. Therefore men are less relevant to study. The second point is that only one type of clinical eating disorder will be discussed – bulimia nervosa. This is

because our critique of current measures of drive for thinness and the development of a new measure do not apply to those with anorexia because there is no issue as to whether they have an extreme drive to be thin.

*Nonclinical population: restrained eaters*

Restrained eaters are of interest in their own right and have also been used as an analogue of the process that presumably contributes to the development of bulimia nervosa (Polivy & Herman, 1985). Herman and Polivy have suggested that those with the greatest history of dietary restraint may eventually become eating disordered (Polivy & Herman, 1985). In addition, they have suggested that chronic dietary restraint is problematic even if it never culminates in an eating disorder (Polivy & Herman, 1985). This group of individuals can be identified by the Herman & Polivy Restraint scale (1985). Restrained eaters' vulnerability to overeating is thought to stem from their extensive history of going on and off diets.

Societal norms for thinness have been blamed for restrained eaters' attempts to restrict food intake in an effort to conform to these norms, often leading to adverse psychological and behavioral effects (Polivy & Herman, 1987). For instance, Herman and Polivy have suggested that "the current societal preference for a thin physique has spawned a corresponding societal preoccupation with dieting." (1987, p.635). Moreover, the restraint literature has suggested that this societal preference for thinness is translated into a personal drive to be thin in restrained eaters and dieters (Herman & Polivy, 1987).

This internalized drive to be thin was thought to produce chronic dieting in restrained eaters which contributed to the development of counter-regulatory eating, stress induced eating, and food hyper-responsiveness in restrained eaters (Lowe & Timko, 2004). The consistent finding of elevated dietary restraint scores in predicting binge eating, eating pathology, and bulimic pathology lead to the belief that dietary restraint was the most potent risk factor for the onset of disordered eating and eating disorders (Stice & Agras, 1998; Stice, 2001; Polivy & Herman 1985; Polivy & Herman, 1992; Lowe, Stice & Fisher, 2004).

Whereas the initial concept of restraint was partially synonymous with dieting behavior, recent research on restrained eating and dieting has suggested that dietary restraint is not associated with restriction of energy intake or an energy deficit (Lowe & Levine, 2005). Stice, Lowe, and Fisher (2004) investigated this relationship by looking at caloric intake through unobtrusive measures. There were no correlations found between scores on dietary restraint scales and caloric intake (Stice et al., 2004). This suggests that classification as a restrained eater is not based upon amount of food actually consumed or dietary restriction resulting in an energy deficit. What traditional restraint scales do predict is weight gain (French, Forster, McGovern, Kelder, & Baxter, 1994; Stice, 2001; Stice, Cameron, Killen, Hayward, & Taylor, 1999). Individuals who are the most restrained according to the Restraint scale have a proneness to put on weight and are actually heavier than unrestrained eaters (Lowe, 1984).

In light of the evidence that restrained eaters are not in negative energy balance or any lighter than their unrestrained counterparts, perhaps restrained

eaters are not dieting to get thinner. Herman and Polivy's view that a drive for thinness motivates restrained eating may be inaccurate. Restrained eaters may have a rational fear of fatness resulting from their behavioral and physiological predispositions toward weight gain (Lowe & Kral, 2006; Stice, Cameron, et al., 1999). Restrained eating may reflect efforts to prevent or reverse weight gain as the result of a predisposition to weight gain. These results suggest that restrained eating may reflect a response to weight gain rather than a predisposition to engage in weight loss behavior from a drive to be thin. Although restraint is probably motivated by both a drive to be thin and a fear of weight gain, restrained eaters' behavior and physiology would suggest that reversing or preventing weight gain may be the more powerful motive for dieting. This is the main question this study is aimed to address.

'Motivation for dieting' can refer to several types of dieting in restrained eaters. The history of weight fluctuations seen in restrained eaters does suggest that this group has traditionally dieted at some point in their past. However, the fact that restrained eaters are not in a negative energy balance suggests that they may not currently be dieting in the traditional sense. Our assessment of motivations for dieting in restrained eaters refers to motivations to engage in dietary restriction, although this dieting may not result in reduced caloric intake and may stem from a fear of fatness, and not the traditional idea that they are dieting in order to be thin.

*Clinical population: bulimia nervosa*

Restrained eating has been implicated as a possible risk factor for the development of bulimia nervosa (Polivy & Herman, 1985). Bulimic patients tend to score high on scales measuring degree of dietary restraint (Lindholm & Wilson, 1988). Similarities between restrained eaters and bulimic patients include level of desired cognitive control over food intake, excessive concern with body weight, and body dissatisfaction (Herman & Polivy, 1988).

One disposition that bulimics share with restrained eaters is their proneness for weight gain (Garner & Fairburn, 1988; Fairburn, Welch, Doll, Davies & O'Connor., 1997). Many women who develop bulimia nervosa have a pre-morbid weight that is above normal (Garner & Fairburn, 1988). Bulimics are also likely to have parents who are overweight (Fairburn et al., 1997). Therefore, women who go on to develop bulimia nervosa may have a rational desire to lose weight and become thinner. However, in some cases, this overweight status may initiate a radical weight loss diet. The typical pattern of bulimia nervosa is such that these women initially lose a great deal of weight through reduced caloric intake (Fairburn & Cooper, 1984). During this stage of development in bulimia nervosa, patients typically do appear to have a drive to be extremely thin. This is exemplified by the finding that many individuals with bulimia reach very low weights before binge eating begins (Butryn, Lowe, Safer, & Agras, 2006). Once the individual achieves a reduced weight, they are often unable to maintain the level of dietary restriction which is necessary to maintain their new and significantly lower weight (Fairburn, Cooper, Doll, Norma, &

O'Connor, (2000). A pattern of bingeing and purging can develop as the result of a large weight loss (Fairburn & Cooper, 1984).

By the time most bulimics present for treatment, they are in the normal weight range, but significantly lighter than their highest pre-morbid weight (Butryn et al. 2006). Individuals with bulimia typically consume a higher amount of net daily calories [even after purging] than what is necessary to maintain their reduced weight (Kaye, Weltzin, Hsu, McConaha, & Bolston, 1993). This group may also have a metabolic state that is more likely to store energy as a result of their weight loss (Leibel, Rosenbaum, & Hirsch, 1995). This is due to a more efficient metabolic state which may increase the likelihood that their food intake will be stored as fat (Nicklas, Rogus, & Goldberg, 1997). As a result, bulimic individuals usually start an upward weight trajectory, which is consistent with the fact that many reach a very low weight at initially, but are normal weight when they present for treatment (Garner & Fairburn, 1988). During this time, bulimic individuals may be highly concerned with maintaining their reduced weight or stemming their weight gain before it reaches a pre-morbid level.

Many bulimic women have a high level of weight suppression –the difference between their highest pre-morbid weight and their pretreatment weight (Butryn et al., 2006). Weight suppression has been associated with weight gain in bulimic patients after entering treatment (Lowe et al., 2006). Those bulimics who are most weight suppressed may have a higher pre-morbid weight and lower pre-treatment weight which may make it likely that they will gain weight. Therefore, it appears that in many cases their fears of weight gain are rational.



It is possible that at the outset of bulimia nervosa, some bulimic patients may have a 'drive to be thin'. This is illustrated by the fact that many bulimics initially diet until they reach anorexic weights (Garner & Fairburn, 1988). However, after several years with the disorder, the trajectory of their weight is the opposite –their weight begins to increase. At this stage, the main concern of many individuals with bulimia may be how to stem weight gain rather than how to become very thin.

Although an extreme drive for thinness is influential early in the disorder when bulimic patients are losing weight rapidly, a fear of weight gain and fatness becomes more prominent later in the disorder. This is presumably because bulimic individuals' concerns shift as their weight is gradually going up. This fear of fatness is unlike the irrational fear of fatness many anorexics experience, because anorexics are underweight and tend to have no history of proneness to weight gain (Butryn et al., 2006). Bulimic's fear of fatness may often be rational because they are weight suppressed, have a personal history of being overweight, and are highly vulnerable to weight gain.

## 2. Rationale of Study

The study's aim was to test the relative role of two cognitive constructs - fear of fatness and drive to be thin - as motivations for dieting and disordered eating behavior in a clinical and nonclinical population.

### *2.1 The Continuum Model of Bulimia Nervosa*

Restrained eaters and bulimic individuals have been shown to exist on a continuous spectrum of eating disorder psychopathology (Lowe et al., 1996). This continuum involves three groups overall – unrestrained eaters, restrained eaters, and bulimic individuals. Features of bulimic psychopathology such as intense concern with weight, appearance, body shape, and eating are shared with restrained eaters to a great extent (Heatherton, Herman, Polivy, & McGree, 1988). Bulimics are similar to restrained eaters in that they also score very high on dietary restraint scales (Lindhold & Wilson, 1988). One of the aims of this project is to determine whether the continuity between these three groups also applies to levels of drive to be thin and fear of fatness (i.e., the restrained eaters group would be significantly higher than the unrestrained eaters group, and the bulimic group would be significantly higher than the restrained eaters group on both measures).

### *2.2 Main Effects*

One purpose of this study was to investigate the relative strength of fear of fatness and drive to be thin as potential motivators of unrestrained eaters, restrained eaters, and bulimic individuals. We reviewed evidence above that suggests the eating behavior of both restrained eaters and bulimic individuals

may be more motivated by a fear of fatness, as opposed to a drive to be objectively thin. Because weight concerns are normative, it would be expected that each group exhibits some level of fear of fatness and drive to be thin simultaneously (Polivy & Herman, 1983; Rodin, Silberstein, & Streigel-Moore, 1985). However, we expected that the level of fear of fatness will be greater as compared to the relative level of drive to be thin in each of the groups of interest.

Another purpose was to look at the extent to which these cognitive constructs are unique to the psychopathology of bulimia nervosa as opposed to dieting behavior in general. It was important to compare the clinically diagnosed bulimic patients on levels of fear of fatness and drive to be thin to an analogue group of restrained eaters. Bulimic patients have a greater level of psychopathology and overall eating and weight concerns than a nonclinical group of restrained eaters (Lowe, Gleaves & McKinney, 1996; Ruderman & Besbeas, 1992). Consequently, the level of drive to be thin, fear of fatness, or both could have been elevated in the clinical group. We expected that both types of motivation to diet would be higher in the clinical group of bulimic patients than in the nonclinical group of restrained and unrestrained eaters.

### *2.3 Interaction Effect*

It was predicted that the level of different dieting motivations to diet would be dependent upon the group in which they are. The results were expected to follow a pattern where fear of fatness increased at a greater rate than drive to be thin. For example, it was hypothesized that fear of fatness would be much greater than drive to be thin as a motivation to diet for bulimic individuals as

compared to restrained eaters. The rate of increase of fear of fatness as compared to drive to be thin was predicted to follow a continuous rise between the unrestrained, restrained, and bulimic groups. This would have suggested continuous differences between the clinical and nonclinical groups.

### 3. Drive to be Thin Measure Development

The literature on eating disorders and dieting has focused a great deal on drive for thinness as an etiological construct. Many different measures have been developed to assess drive for thinness. In reality, these measures assess a variety of different constructs. What the literature often defines as drive for thinness has been measured with instruments that are really targeting fear of fatness. For example, the EDI's Drive for Thinness subscale actually includes questions which are not aimed at a drive to be thin, but are targeting fear of weight gain and general dieting (e.g. 'I am terrified of gaining weight' or 'I feel extremely guilty after overeating') (Tasca, Illing, Lybanon-Daigle, Bissada & Balfour, 2003 ). Other measures constructed to assess drive for thinness include Stice's *Thin-Ideal Internalization Scale*. This scale does not provide an objective definition of thinness (e.g. 'I would like my body to look like the women that appear in TV shows and movies' or 'Slender women are more attractive') because it does not provide a personal reference point of what is 'thin' (Thompson & Stice, 2001).

This project attempted to develop a measure that better assesses drive to be thin in both clinical and analogue groups of normal weight women. In order to create a measure which more accurately assessed a drive to be thin, it needed to exclude questions which targeted fear of fatness, drive to be thinner (as opposed to thin), avoidance of weight gain, or proneness to weight gain. One of the aims of this measure was to focus not on a drive to be *thinner*, which would apply to those individuals who are currently overweight and have a rational desire for

weight loss, but on a drive for *thinness* itself. This measure had an objective definition of thinness, conceptualized as being below ideal body weight for age and height. This level of thinness was anchored at 15% below ideal body weight. We chose to anchor thinness at 15% below ideal because it is a significantly and noticeably reduced weight as compared to normal. Having a body weight lower than 15% below healthy body weight is also the point of demarcation for defining anorexia nervosa. Therefore, women who endorsed this extreme level of thinness were most likely those who may have a pathological drive to be thin, as opposed to a drive to be normal weight. Therefore, this measure was designed to tap a drive for objective thinness.

Twenty-five items were generated by Yelena Chernyak and Dr. Michael Lowe to assess different aspects of a drive to be thin. The expert-judge method was used to evaluate, rate, and select test items to include in the measure. This method is often used in the construction of new measures to establish their relevance and representativeness to the content domain being tested (Sireci & Geisinger, 1995). This 25-item pool was sent out to experts in the field of body image and eating disorders. Eight expert reviewers replied with ratings on a Likert scale of how appropriate each item was to the construct of a 'drive to be thin'. A criterion of at least 3.7 out of 5.0 was used to select the 14 items. This criterion corresponded to a rating between 3 ('moderately') and 4 ('very much') for each sample item. Weight history and weight satisfaction questionnaires were added to the drive to be thin questions for a total of 24 items in the measure.

It was necessary to develop an original measure to assess drive to be thin, because a measure of the construct of interest did not exist. The drive to be thin scale (DTBT) was set up into four sections (see Appendix A). The first section was an exercise in which participants referred to the table provided (height-weight table) to calculate their tabled (ideal) and changed (reduced by 15%) weight. The second section included general questions about desire to be at certain weight levels. The third section included the expert-reviewed questions. The expert-reviewed questions were asked in reference to the *reduced* weight. All answers were measured on a Likert scales of 1-5 ranging from strongly agree to strongly disagree.

This project did not have the scope to do a full psychometric workup. More rigorous testing for psychometric properties should be carried out following this project, including a factor analysis when a higher number of subjects are acquired.

## 4. Method

### 4.1 Sample

Participants were composed of two groups of females. The first was a nonclinical group of freshman undergraduate women. The second was a clinical group of female participants with clinically diagnosed bulimia nervosa or with bulimia-spectrum Eating Disorder Not Otherwise Specified. Recruitment for both of these groups was part of two separate and unrelated studies. Recruitment for the nonclinical group of freshman undergraduates was done in conjunction with the recruitment being conducted for the *Obesity Prevention at Universities Study* from Michael Lowe, protocol #16218, already approved by the IRB committee. The nonclinical group was also recruited from Drexel University classrooms. Therefore, the nonclinical group of participants was not all enrolled in the Obesity Prevention at Universities study. The proposed project was approved by the Drexel IRB. Recruitment for the clinical group of eating disordered women was done in conjunction with recruitment being conducted for the *Research Study on the Treatment of Eating Disorders* from Michael Lowe, protocol #03647, already approved by the IRB committee.

The first recruitment procedure included a nonclinical group of freshman female undergraduates from Drexel University. This recruitment was done as part of a larger and unrelated study. This larger study attempted to contact all freshman undergraduate females and provide them with an opportunity to participate in both the larger study and in this project. Participants were contacted using a mass e-mail as well as advertisements throughout campus.



Every incoming undergraduate female was contacted and invited to participate in the larger study as well as other studies, including this project. Participants were instructed to contact one of the co-investigators on the project to receive more information about the study and partake in screening procedures.

The second portion of recruitment involved females enrolled in an intensive outpatient treatment program at the Renfrew Center for the treatment of eating disorders in Philadelphia, PA. The IOP program offered group therapy and meal time support therapy in 3 - 4 hour sessions 3 times a week in the evenings for individuals who are attending work or school. These participants were part of a larger, preexisting study looking at the effectiveness of treatment at the center. The assessment questionnaires for this project were incorporated into the existing study. This project also made use of the measures already part of the larger study.

These participants were introduced to the larger study and the current project during their orientation proceedings. By being admitted into the orientation, the participants underwent a first screening procedure which indicated that they were a female with eating related problems. Immediately following the orientation, the orientation-leader introduced the co-investigator to the participant and allowed them to obtain informed consent to participate in the larger study and the current project. Each participant was screened to make sure they meet criteria for anorexia nervosa, bulimia nervosa, or EDNOS using the SCID and EDE diagnostic interviews.

Participants recruited from the college population were female undergraduates at least 18 years of age at Drexel University without a current eating disorder. Regardless of the screening procedures administered for the larger study, they were allowed to be included in this project. This group was not formally screened for the presence of an eating disorder using the *DSM-IV* (APA, 1994) diagnostic criteria and the EDE (Fairburn & Cooper, 1993) because it is a nonclinical population. However, it was possible that there were a few participants with subthreshold bulimic type symptoms. Questions in the *Dieting and Weight History questionnaire* targeted binge eating behavior. If a participant indicated that they binged at least 1-2 times per week, this indicated a high likelihood that they may have an eating disorder, and they were excluded from the analysis.

Participants recruited from the Renfrew Center for the clinical group met *DSM-IV* diagnostic criteria for current bulimia nervosa or EDNOS-BN, where they met some but not all the criteria for bulimia nervosa. Past literature has indicated that a large percentage of eating disordered subjects meet all *DSM-IV* criteria for bulimia nervosa except for the frequency of binge eating or purging. In many cases, eating disordered subjects do not have binge eating episodes occurring a minimum of twice a week or the binge eating episodes may not be objectively large (Grange, Binford, Peterson, Crow, Crosby, Klein, Bardone-Cone, Joiner, Mitchell, & Wonderlich, 2006). A large percentage of these subjects report subjective binge eating episodes, which are characterized by a sense of loss of control but do not involve consuming an objectively large amount of food. For

the purpose of this study, EDNOS-BN was diagnosed in patients who were not in the anorexic weight range, demonstrated some form of compensatory behavior, and showed some binge eating and purging symptoms that did not meet criteria for full bulimia nervosa. The binge eating and purging symptoms must have occurred at least once a week, which is less than the minimum of twice a week necessary for a diagnosis of bulimia nervosa according to the *DSM-IV* (APA, 1994). The frequency of binge eating and purging, objective binge eating, and BMI information were collected through the administration of the Eating Disorders Examination which is administered as part of the larger study. All individuals in this group were female and at least 14 years of age.

The measures were completed by a total of 138 participants, including 45 (i.e., 33% of completers) participants from the clinical group and 93 (i.e., 67% of completers) participants from the nonclinical group. Of those who completed the measures, 23 (i.e., 51%) participants in the clinical group were excluded from the analysis due to a diagnosis of an eating disorder other than Bulimia Nervosa or EDNOS-BN. A total of 29 (i.e., 31%) participants in the nonclinical group were excluded from the analysis due to BMI restrictions or the presence of bingeing or purging (suggesting the presence of a possible eating disorder). Sixteen (i.e. 73%) participants in the clinical group had a diagnosis of Bulimia Nervosa and 6 (i.e. 27%) had a diagnosis of EDNOS-BN. Of those participants who had a diagnosis of Bulimia Nervosa, 14 (i.e. 88%) were BN binge-purging type, and 3 (i.e. 19%) had a history of anorexia nervosa. The most common secondary

diagnosis for participants in the clinical sample was Major Depressive Disorder, present in 11 (i.e. 50%) participants.

#### *4.2 Procedure*

The undergraduate females at Drexel University completed the self-report measures via an online electronic data collection method. This was done through the Sona-Systems website, which provided web-based human subject-pool management and administration. After informed consent was obtained in-person, participants were directed to the appropriate page in the Sona-Systems website through a link sent to their e-mail account. Participants created a private log-in identification and completed the self-report measures available online. Data from the completed questionnaires was submitted over a secure connection via the website. Participants were also seen in-person to be weighed on an accurate scale and have their height measured. A body mass index was calculated using these measurements, and participants with a BMI over 27 were excluded from the analysis. We chose to exclude participants above this BMI level because the predictions of restraint theory, which the hypotheses for this study was based upon, were not applicable for people who are overweight. Additionally, our target clinical population was individuals with bulimia nervosa, the great majority of whom had BMIs below 27. Therefore, in order to equalize the BMI ranges of the clinical and nonclinical populations, we limited the nonclinical population's BMI range.

The clinical group at the Renfrew center completed the self-report questionnaires in a private room during their assessment appointment. The

assessment appointment included screening for bulimia nervosa using the Structured Clinical Interview for the *DSM-IV* (SCID-IV) and the Eating Disorders Examination (EDE). The SCID-IV is a structured diagnostic interview used to make psychiatric diagnoses based on the *DSM-IV*, including eating disorders (First, Gibbon, Spitzer & Williams, 1996). The EDE is an interviewer based semi-structured interview used to diagnose bulimia nervosa and other eating problems (Fairburn & Cooper, 1993).

#### *4.3 Measures*

##### *Restraint scale*

Level of dietary restraint for the participants was determined using the Herman and Polivy Restraint Scale (Polivy, Herman, & Warsh, 1978). This scale is meant to identify chronic dieters by assessing the level of concern about body weight and dieting to control it (Heatherton, Herman, Polivy, King & McGree, 1988). A sample item is 'Do you eat sensibly in front of others and then splurge alone?' (Herman & Mack, 1975).

Although this measure is not reliable or valid with obese populations, it is useful with the normal weight population. The Restraint scale is reliable, with an alpha of .086 (Ruderman, 1983). This scale has been shown to have strong predictive and construct validity (Ruderman, 1983).

The Restraint Scale was used to classify subjects as restrained eaters (RE) and unrestrained eaters (URE) (Herman & Polivy, 1980). By convention, a cut-off value from previous literature was used to divide the sample (Heatherton, Polivy, & Herman, 1989; Polivy, Herman, & Howard, 1988; Herman & Mack,

1975). For the purposes of this study, a value of 15 and above (restrained) and 14 and below (unrestrained) on the Restraint scale was used to divide the nonclinical group into restrained and unrestrained eaters.

#### *DTBT*

The Drive to be Thin scale (DTBT) is a 14-item self-report measure which assesses an individual's desire to be at an objectively thin weight for their height. This measure is intended for use only with the normal weight individuals. Because this measure was originated for the purpose of this project, it does not have any previous psychometric data. Cronbach's alpha was calculated among the 14 items for the DTBT measure ( $\alpha = .947$ ).

#### *GFFS*

The Goldfarb Fear of Fat Scale (GFFS) is a 10-item self-report measure which assesses an individual's fear of fatness. It uses a 4-point Likert scale ranging from 'very untrue' to 'very true'. This device was initially developed for use with bulimic patients. The items assess weight concerns such as 'becoming fat would be the worst thing that could happen to me'. The Goldfarb Fear of Fat Scale includes norms and reliability data with normal, anorexic, and bulimic women. It has an alpha of 0.85, a test-retest reliability of 0.88, and good discriminant validity. It has been shown to significantly differentiate bulimic individuals, repeat dieters, and non-dieting women (Goldfarb et al., 1985). The GFFS can be utilized with clinical or non-clinical populations to investigate a fear of losing control and becoming fat.

### *EDI-2 DFT*

The Drive for Thinness (DFT) subscale is part of the Eating Disorders Inventory-2. The EDI-2 was developed to differentiate between clinical groups and nonclinical groups with eating disorders (Garner, Olmstead, & Polivy, 1983). The Drive for Thinness subscale is a 7-item self-report scale with specifically looks at preoccupation with weight. This subscale is useful for differentiating clinical and nonclinical groups (structure coefficient = .75). In clinical samples, the chronbach's alpha ranges from .80-.91 for the original subscales, including the DFT (Eberenz & Gleaves, 1994). The drive for thinness and body dissatisfaction subscales of the EDI-2 are strongly correlated with one another ( $r=.63$ ) (Espelage, Mazzeo, Aggen, Quittner, Sherman, & Thompson, 2000).

### *Dieting and weight history questionnaire*

This 12-item questionnaire was generated to collect a history of participants' lifetime dieting and weight changes. This also includes several items which distinguish those individuals who may have a subthreshold or full eating disorder. Several questions regarding binge eating history are included in order to ensure that participants in the nonclinical group do not have current bulimia nervosa.

## *4.4 Analysis*

### *Between groups variables*

Two separate analyses were performed to compare the groups on motivations to diet. Unrestrained eaters were compared directly to restrained eaters in order to assess dieting motivation in the nonclinical group. Restrained

eaters were then separately compared to individuals with bulimia in order to compare the nonclinical and clinical groups. Unrestrained eaters were not included in this second analysis because it was a purer comparison to look at restrained eaters and bulimic individuals alone. This is because restrained eaters and individuals with bulimia differ on only one dimension – clinical status. Whereas, unrestrained eaters differ from individuals with bulimia on two dimensions – they are nonclinical and unrestrained. Comparing only two groups at a time allowed for less unaccounted variability.

While the goal of this study was to make these two separate comparisons, the three groups (URE, RE, BN) do exist along a single dimension. This dimension reflects a degree of dieting. Traditional restraint theory, including Herman & Polivy (1985), would have viewed this dimension as a susceptibility to disordered eating, or more specifically, a susceptibility to bulimia nervosa. However, it should be noted that the idea that this dimension actually represents a susceptibility to disordered eating is not endorsed here.

#### *Within groups variables*

The EDI-2 Drive for Thinness scale was highly correlated with Goldfarb's Fear of Fatness Scale because many of its items asked questions which pertained to fear of weight gain. A correlation was run between the DFT and GFFS to test the extent to which they were tapping the same construct. The newly developed DTBT measure was developed to measure a different construct from both the DFT and GFFS scales. It was important to establish that the Drive to be Thin scale measured a construct that did not overlap with the Drive for



Thinness subscale or Goldfarb's Fear of Fatness scale. A correlation was run between the DTBT and GFFS to see if they were measuring different constructs. This determined how high the DFT-GFFS correlation was and whether the DTBT-GFFS correlation was lower.

Next, we tested the level of drive to be thin and fear of fatness in each susceptibility to bulimia nervosa group. Both of these constructs may have been present to some extent in most people, and particularly in individuals with weight or shape concerns. In order to compare the scores on the DTBT and GFFS scales, the raw scores for each scale were converted to standardized z-scores. This enabled the investigators to look at the results of the two scales simultaneously and compare them directly. Converting raw scores into z-scores involves subtracting each raw score from the mean of the raw scores minus the standard deviation of the raw scores.

$$Z\text{-SCORE} = (\text{RAW SCORE} - \text{MEAN OF RAW SCORES}) / \text{STANDARD DEVIATION OF RAW SCORE}$$

### *Planned Analyses*

We tested for main effects before we tested for an interaction effect, even though main effects were of little interest if the predicted interaction was found to be significant. The main effect investigated was for group. We expected that the clinical group scored higher on all measures of motivation to diet than the nonclinical group. This was tested using an ANCOVA. We wanted to know for which of the groups fear of fatness and drive to be thin were greatest, relative to drive to be thin. We also wanted to know for which of the restraint groups drive to be thin was be greatest, relative to fear of fatness and drive to be thin.

The main question we wanted to investigate was whether there was an interaction between group and motivation to diet. A significant interaction between these variables would have indicated that the relative intensity of fear of fatness and drive to be thin depended on the group. Our prediction was such that the intensity of fear of fatness would show a bigger increase across the three groups than the drive to be thin.

A mixed model ANCOVA was conducted because there was a between-groups and within-groups analysis. This was a 3x3 factorial design where one factor was group, which included three levels (unrestrained, restrained, and bulimic) and the second factor was motivation to diet, which included three levels (DTBT, GFFS, & DFT). An ANCOVA is typically used to test the main and interaction effects of categorical variables (group) on continuous dependent variables (DTBT, GFFS, & DFT), controlling for the effects of selected other continuous variables which may vary with the dependent variable (in this case, BMI and age). The continuous dependent variable was the standardized score on the DTBT, GFFS, and DFT scale. The converted z-scores for the DTBT, GFFS, and DFT represented a *single* dependent variable which could be analyzed as a repeated measure because the raw scores on each measure were standardized into z-scores (R. D. Crosby, Ph.D., personal communication, July 3, 2006). In addition, it allowed us to include body mass index as a covariate.

A conservative power analysis for ANCOVA was run using Sample Power, which is a software program used for the calculation of power. The power analysis indicated that a total of ninety participants were necessary to detect a

medium effect size of .25 with an alpha of .05. This sample size was sufficient to obtain a power of .80 in detecting both main effects and an interaction between the two factors. This projection was obtained by half the estimate for a non-repeated measures ANCOVA of the same design because sample power did not allow us to determine power for this specific design. The final projection was realistic to collect given the sample.

Recruitment of the nonclinical population in conjunction with the larger study over the data collection period was projected to recruit up to sixty participants. By definition, half of these would fall into the unrestrained group and half would fall into the restrained eaters group. This projected sample size would allow a total of thirty participants in each of the nonclinical groups. Recruitment of the clinical population was less predictable. The Renfrew Center population was composed of approximately 40% bulimic patients. Our target sample size for the clinical group was at least thirty patients. Based on past enrollment, the projected recruitment of bulimic individuals at the intensive outpatient programs at the Renfrew Center over the next nine months was consistent with this target sample of patients. The projected cut-off for data collection of this study was May of 2007. The minimum number of participants for the clinical group was twenty participants, and the minimum number of participants for the nonclinical group was 60 participants.

## 5. Results

### 5.1 Statistical Analyses

The primary analysis consisted of a mixed-model ANCOVA that was used to examine participants' scores on measures of dieting motivation. This analysis included participant group (i.e., URE, RE, or BN) as a between-groups factor, and a within-subjects factor that measured type of dieting motivation (GFFS, DFT, and DTBT). BMI and age were covariates in this analysis. Within each measure, Tukey's post-hoc test was used following statistically significant effects to identify group differences in scale scores.

The scale scores for GFFS, DFT, and DTBT were transformed from raw scores into standardized z-scores for each measure. Converting raw scores into z-scores involved subtracting each raw score from the mean of the raw scores and dividing it by the standard deviation of the raw scores. Each scale was converted in this way in order to allow the three scales to be compared directly and simultaneously.

### 5.2 Descriptive Statistics

The BMIs of the URE, RE and BN groups were 21.7 (SD=2.1), 23.1 (SD=2.8), and 21.1 (SD=2.3), respectively. BMI differed significantly between the three groups  $F(2,83) = 4.7, p < .05$ . Tukey's post-hoc test indicated that the only significant difference between groups was that REs had higher BMIs than UREs ( $p < .05$ ). BN and RE both had significantly greater past BMIs than current BMI ( $t = -6.88, p < .001$ ;  $t = -4.30, p < .001$ ). Bulimic individuals were not found to be significantly higher on weight suppression compared to restrained eaters.

The ages of participants in the URE, RE and BN groups were 18.7 (SD=0.4), 18.7 (SD=0.4), and 21.5 (SD=3.4), respectively. Age differed significantly between the three groups  $F(2, 84) = 20.3, p < .001$ . Tukey's post-hoc test indicated that participants in the clinical group were significantly older than both REs and UREs ( $ps < .001$ ).

*Table 1: Descriptives*

	URE		RE		BN	
	M	SD	M	SD	M	SD
Age	18.70	.416	18.67	.39	21.45	3.39
BMI	21.27	2.27	23.01	2.79	21.74	2.10
Highest BMI	21.79	2.27	24.03	3.02	24.04	2.04
Self-Reported Dieting	5.3% (N = 2)		38.5% (N = 10)		63.6% (N = 14)	
	WLD 2.6% (N = 1)	WGA 2.6% (N = 1)	WLD 26.9% (N = 7)	WGA 11.5% (N = 3)	WLD 45.5% (N = 10)	WGA 9.1% (N = 2)

Note: WLD = weight loss dieting; WGA = weight gain avoidance.

*Table 2* lists the mean and standard deviation of the scores for DFT, GFFS, and DTBT for each group of participants and for participants overall. Drive for Thinness (DFT) and Fear of Fatness (GFFS) were highly and significantly correlated ( $r = .871; p < .001$ ) amongst all participants. DTBT was significantly correlated with both DFT ( $r = .313; p < .005$ ) and GFFS ( $r = .340; p < .005$ ) amongst all participants. However, a comparison on the size of the correlations was performed (Blalock, 1972) where the correlations between DTBT and both DFT and GFFS were found to be significantly lower than the correlation between DFT and GFFS ( $p < .05$ ). These correlations remained significant in the clinical group of BN. The pattern of results was different among the nonclinical group of REs

and UREs where the DTBT was not significantly correlated with either DFT or GFFS ( $p > .05$ ). The pattern of relationships among the measures remained essentially the same when partial correlations were used to control for the influence of BMI and age. All calculated correlations are illustrated in *Table 3*.

*Table 2: Motivation to Diet Means*

Group	N	DFT	GFFS	DTBT
Unrestrained	38	21.8±6.9 <sub>a</sub>	18.1±5.5 <sub>a</sub>	35.2±13.2 <sub>a</sub>
Restrained	26	30.1±6.4 <sub>b</sub>	25.8±5.5 <sub>b</sub>	37.8±15.4 <sub>a</sub>
Bulimic	22	33.3±3.7 <sub>b</sub>	33.2±4.2 <sub>c</sub>	50.0±12.3 <sub>b</sub>
Total	86	27.2±7.9	24.1±8.0	40.0±14.8

*Note: Means which share the same subscript within each measure are not significantly different ( $\alpha = .05$ ).*

*Table 3: Correlations of Motivation to Diet Measures*

	DFT & GFFS		DTBT & DFT		DTBT & GFFS	
	r	p	r	p	r	p
<i>URE &amp; RE</i>	.868	.000	.136	.254	.102	.394
<i>RE &amp; BN</i>	.664	.000	.472	.001	.485	.000
<i>BN</i>	.677	.001	.561	.007	.356	.104
<i>All</i>	.871	.000	.313	.002	.340	.001

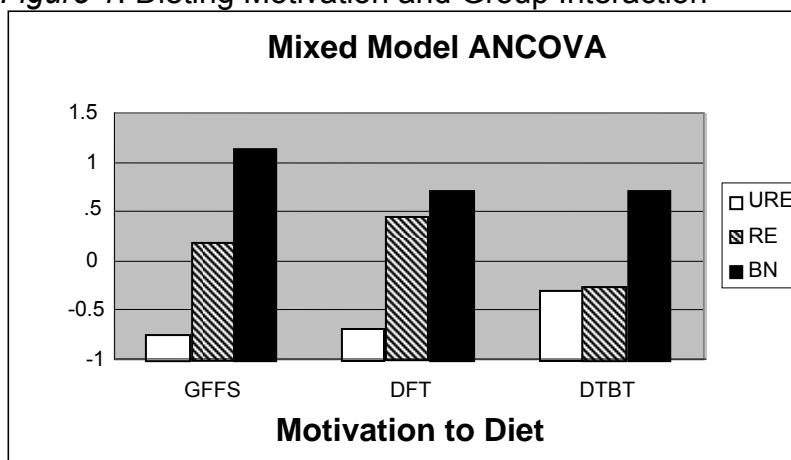
### 5.3 Primary Analysis

Analysis of variance (ANCOVA) was used to compare the groups on each of the three measures of dieting motivation. A significant main effect of group was detected  $F(2, 81) = 30.2, p < .001$ . Post-hoc tests revealed that the BN group scored significantly higher than REs on GFFS and DTBT. In addition, REs scored significantly higher on DFT and GFFS compared to UREs.

Differences between the three measures collapsed across groups were not of interest. In addition, because the scores on the three measures of dieting motivation were converted into z-scores for the purpose of this analysis, the mean score for each measure was zero.

A significant interaction was found between Motivation to Diet and Group ( $F(4,162)=6.5, p<.005$ ). See *Figure 1* for a graphical depiction of the interaction. BMI and age did not account for significant variance in this analysis ( $p > .05$ ). The interaction remained significant when BMI and age were removed from the model.

*Figure 1: Dieting Motivation and Group Interaction*



*Note 1: Estimated Marginal Means are graphed.*

Individual ANOVAs were conducted on each measure of dieting motivation. These analyses found significant differences between groups on all three measures (DFT:  $F(2, 83) = 32.4, (p < .001)$ ; GFFS:  $F(2, 83) = 65.0 (p < .001)$ ; DTBT;  $F(2, 83) = 8.2, (p < .005)$ . *Table 2* illustrates group comparisons within each measure of motivation to diet. On GFFS, the mean scores for all three groups were significantly different from one another (with  $URE < RE < BN$ ). On DFT, UREs scores were significantly lower than those of REs and the clinical group. The scores of REs and BN were not significantly different on DFT. For DTBT, the UREs and REs scored significantly lower than the clinical sample of BN. The mean scores for UREs and REs were not significantly different on this measure.



## 6. Conclusions

The two goals of this study were to better understand the dieting motives of nonclinical restrained eaters and individuals with bulimia nervosa. The first goal was achieved by comparing dieting motives of normal weight restrained eaters relative to normal weight unrestrained eaters. The second goal was achieved by comparing the dieting motives of individuals with bulimia relative to normal weight restrained eaters. These two questions will be addressed separately in the discussion as differing patterns of dieting motivation were found.

The results showed that the nonclinical group of unrestrained and restrained eaters did not endorse a drive to be objectively thin (DTBT). However, fear of weight gain (GFFS) and drive for thinness (DFT) were elevated in the restrained eaters where restrained eaters displayed higher levels of dieting motivation on these two measures in comparison to unrestrained eaters.

The results indicated that fear of weight gain (GFFS), drive for thinness (DFT), and drive to be objectively thin (DTBT) have different patterns of dieting motivation in restrained eaters and bulimic patients. In comparison to restrained eaters, bulimic individuals displayed higher levels of dieting motivation on all three measures and were the only group to endorse a drive to be objectively thin.

Drive for thinness and related concepts such as idealization of the thin ideal have been very influential in psychological theories of disordered eating. However, existing measures of these constructs did not appear to measure a

drive to be objectively thin. Therefore, it was necessary to develop a new measure to target this construct. The resulting measure was the DTBT scale.

BMI differences were found only for the unrestrained and restrained eater groups, where restrained eaters had a significantly higher BMI than unrestrained eaters. This finding is consistent with findings in other literature which indicate that restrained eaters typically do have higher relative weights than their unrestrained counterparts (Lowe, 1984). This is possibly due to a predisposition toward weight gain in restrained eaters that may contribute to their restraint level (Stice, Cameron, et al., 1999, Lowe & Kral, 2006). Although bulimic individuals also had lower BMIs compared to restrained eaters, this finding was not significant. This could simply be attributed to low power because of the low number of participants in the clinical group.

Because motivations to diet could depend on BMI as well as group status, it was important to see if group differences were maintained when BMI was controlled. Therefore, BMI was used as a covariate in the main analysis for this study. Significant differences in age were also found between the groups, where the clinical group was found to be older than the nonclinical groups. As a result, we chose to control for age in our analyses. The inclusion of BMI and age as covariates did not change the results. Although RWS was originally proposed as a covariate in this study, it was not correlated with DTBT and was ultimately not included as a covariate.

### *6.1 Which dieting motives differentiate restrained and unrestrained eaters?*

Past literature has raised questions about motivations for restrained eating. Given that past measures of dieting motivation have not actually measured a drive to be objectively thin, it has not been possible to assess whether restrained eaters are motivated to diet by societal demands for objective thinness (as suggested in Herman & Polivy, 1987) or by their own tendencies toward weight gain (French, Jeffery, & Wing, 1994; Klesges, Isbell, & Klesges, 1992; Stice, Cameron, et al., 1999).

Our data indicate that GFFS and DFT showed a greater increase across the nonclinical group of unrestrained and restrained eaters as compared to DTBT. DTBT was low in both groups and was unable to discriminate within the nonclinical group between unrestrained and restrained eaters. The absence of an association does not appear to be due to low power because these two groups differed significantly on the two other measures of dieting motivation. The explanation proposed by traditional restrained theory restrained eaters are motivated to diet by an irrational desire to become skinny, not just somewhat thinner (Herman & Polivy, 1987), is not consistent with the results we have obtained in the nonclinical population.

The traditional assumption that normal weight restrained eaters' drive for thinness reflects an unhealthy need to be thin (e.g., Polivy & Herman, 1987) appears to be inaccurate. Instead they appear to be motivated to diet mostly by a fear of weight gain and fatness. This is consistent with their predisposition

toward weight gain and our previously proposed hypothesis (Lowe & Levine, 2005) that restraint represents a proxy risk factor for weight gain.

### *6.2 Which dieting motives differentiate restrained eaters and bulimic individuals?*

It is useful to compare restrained eaters and bulimic patients directly, while leaving out unrestrained eaters. Comparing bulimic patients only to restrained eaters is a purer comparison than comparing them to the nonclinical group as a whole. The reason for this is unrestrained eaters differ from bulimic patients in two ways: they are nonclinical and unrestrained, while restrained eaters differ from bulimic patients only on one dimension: they are nonclinical but are similar to the bulimic group in terms of chronic dieting.

Bulimic individuals scored higher than restrained eaters on both GFFS and DTBT, but not on DFT. Because GFFS and DFT were shown to be very highly correlated, it is surprising to find that only one of the two measures (GFFS) significantly differentiated the two groups. It is important to note that while the correlation between DFT and GFFS in the RE and BN group is substantial, it is not as large as in the nonclinical group. Although we cannot be sure exactly why DFT failed to differentiate bulimic individuals from restrained eaters, one possible explanation takes into account the disparate weight histories of the two groups. Because bulimic individuals are much higher than restrained eaters in weight suppression, they have actually experienced being significantly heavier than they currently are. This could partially explain why they score substantially higher than restrained eaters on GFFS. Meanwhile, the restrained eaters in our study have higher BMIs than bulimic participants and presumably have been

gaining weight over time (thus they used to be thinner than they are now). As a result, these restrained eaters may score almost as high as bulimics on DFT because they may want to be thinner (i.e. they would very much like to return to the lower weights they were at a few years previously).

There was a large difference between DTBT scores of restrained eaters and bulimic individuals. This dimension [DTBT] better separates the nonclinical restrained eaters and clinical group of bulimic individuals. Both GFFS and DTBT were significantly elevated in the clinical group. This suggests that bulimic individuals may be highly motivated in their dieting behavior by both a fear of weight gain and a drive to be objectively thin, unlike restrained eaters who are primarily motivated to diet by a fear of weight gain. For bulimic women, fear of fatness and drive to be thin may both motivate extreme dieting practices which in turn could fuel binge eating and purging. Because past weight loss appears to play a major role in the development of binge eating (Fairburn & Cooper, 1984), those bulimic patients scoring highest on DTBT may be caught in a double bind: They want to lose weight to attain a thin body but losing weight may increase their binge eating and therefore their susceptibility to weight gain.

### *6.3 Drive for Thinness is Different than Drive to be Thin*

A very high correlation was found between the *Drive for Thinness* subscale and Goldfarb's Fear of Fatness Scale among the whole sample. This strong relationship between DFT & GFFS was much greater than the relationship of DTBT with DFT or GFFS. DFT appears to actually be measuring a construct that is more similar to fear of fatness or avoidance of weight gain than to a desire

to be objectively thin. This is noteworthy because many researchers have assumed that drive for thinness also represents a drive to become objectively thin, and our results indicate that this is not a valid assumption. This conclusion is based both on the very high correlation between DFT & GFFS and the nature of many of the DFT items. Some DFT items describe a fear of fatness (e.g. *I am terrified of gaining weight; If I gain a pound, I worry that I will keep on gaining; I feel guilty after overeating*), but only one of the items describe a desire to be thinner (the closest is *'I am preoccupied by the desire to be thinner'*). Also, to the extent that DFT does reflect a desire to be thinner (not 'thin'), it appears that what most normal weight nonclinical respondents mean by "thinner" is to lose a small amount of weight, not to lose enough weight to become skinny or objectively thin (defined as 15% below the medically appropriate weight for their height). The foregoing arguments suggest that the very high correlation between DFT and GFFS is a reflection of DFT measuring a construct that is best characterized as avoidance or weight gain or, at most, a desire to be somewhat thinner. An alternative conclusion is that the correlation between the two measures is due to the measurement of a drive for thinness by GFFS. However, all of the GFFS items explicitly refer to weight gain or its consequences.

#### *6.4 Drive to be Objectively Thin is Linked to Drive for Thinness in Bulimic Individuals*

A significant correlation between DTBT and DFT was found in the clinical group. This indicates that DTBT and DFT were tapping related constructs in bulimic individuals. Conversely, DTBT was not correlated with either GFFS or DFT in the nonclinical group, where DTBT was shown to be tapping a separate

construct. It is interesting to find that only DFT and not GFFS was significantly correlated with DTBT among bulimic individuals, especially given the high correlation between DFT and GFFS in this group. Although we cannot be sure exactly why this is, we do offer one plausible explanation. When a nonclinical unrestrained or restrained eater completes the DFT, the construct that is being measured appears to be a fear of weight gain and perhaps a desire to be somewhat thinner. However, when a bulimic individual completes the DFT, they may interpret many of the items in relation to a desire to achieve a significant loss to become objectively thin. If this is accurate, it suggests that DFT actually measures what its developers intended for it to measure (a drive to be objectively thin) among individuals with eating disorders (or at least bulimia). As a result, a high correlation between DFT and DTBT is found in bulimic individuals. What this means for GFFS is that while it is significantly correlated with DFT in this sample, bulimic individuals do not interpret the items on the GFFS in relation to a desire to become objectively thin, and GFFS does not relate to DTBT in the same way DFT does. It is plausible that while fear of fatness is highly endorsed by this group, it is not very relevant or related to the desire to be objectively thin (DTBT). For example, it is likely that if a bulimic individual could somehow be assured that they will never gain a pound (and thereby reduce their fear of weight gain or fatness), they would be slightly happier but still highly dissatisfied with their weight because they remain motivated to become objectively thin. On the other hand, if a restrained eater was assured that they would never gain weight, they might be much more content because their ideal weight tends to be higher

than those of bulimic individuals. Therefore, the possible lack of interconnectedness between fear of fatness and a desire to be 'thin' may partially account for the lack of a significant relationship between GFFS and DTBT, in light of a significant relationship between DFT and DTBT.

A consideration of the personal weight histories of bulimic patients may help explain both their elevated scores on DTBT & GFFS and the high correlation found between DTBT & DFT in this group. The high endorsement of GFFS and DTBT found in the clinical sample suggests that nature of the motivation to control weight in bulimic patients is unlike that in restrained eaters, where bulimic patients may have a fear of fatness that is based not only on an abhorrence of adiposity but also on the fact that being fat means that one is even further from the highly desired goal of being very thin.

Individuals with BN have been shown to have a greater history of personal and familial overweight than their non-bulimic counterparts (Garner & Fairburn, 1988; Fairburn et al., 1997). Most bulimic individuals experience a dramatic diet-induced weight loss before developing binge eating and purging (Fairburn & Cooper, 1984). Approximately one-third of bulimic patients have a personal history of anorexia and most are still significantly weight suppressed (even though they are primarily in the normal weight range) when they present for treatment (Butryn et al., 2006; Garner & Fairburn, 1988; Lowe et al., 2006; Russell, 1979). Because many bulimic patients are weight suppressed - that is they currently weigh significantly less than their highest weight ever - their metabolic rate may be suppressed, making them prone to weight gain (Leibel et



al., 1995). Weight suppression also prospectively predicts weight gain during inpatient treatment (Lowe et al., 2006) and poorer treatment outcome (Butryn et al., 2006). Thus fears of weight gain may be grounded in reality for many bulimic patients, both because of their premorbid tendency toward overweight and because their current weight suppressed state may make them susceptible to weight gain. This suggests avoidance of weight gain maybe a powerful motivator of dieting for bulimic patients.

However, many bulimic individuals also reached very low weights during the development of their disorder (Fairburn & Cooper, 1984; Butryn et al., 2005). Unlike restrained eaters, who typically are not that far below their highest weight ever (Lowe, 1984), bulimic individuals do endorse a pathological desire to be at an extremely thin weight for their height. The fact that most bulimic patients were sufficiently motivated to diet and lose a substantial amount of weight in the past suggests that they may still be motivated to return to a sub-normal body weight. Thus, many bulimic individuals may experience *both* a heightened fear of fatness and a strong drive to be objectively thin because they have actually experienced both the dreaded state of higher adiposity and the idealized state of extreme thinness.

### *6.5 Clinical Implications*

Questions have been raised in past literature regarding what motivates restrained eaters and bulimic individuals to diet, especially if dieting contributes to overeating and binge eating (Polivy & Herman, 1985, Polivy & Herman, 1987). Given that *DFT* does not actually appear to measure a drive to become thin, but

a drive to be *thinner* or avoid weight gain, scores of past studies that have measured drive for thinness and related constructs may not be able to tell us much about the role of a need to become thin, only the role of wanting to be thinner or to avoid obesity (neither of which are necessarily pathological goals).

The newly developed DTBT scale may be useful in the assessment and treatment of bulimic patients. The DTBT was found to differentiate clinical and nonclinical groups better than existing measures that measure fear of fatness and avoidance of weight gain (GFFS & DFT). This scale measures drive to be objectively thin, which is a psychological variable that was found not to be correlated with personal weight history (i.e. lowest weight ever, current weight, or weight suppression). Psychological variables which are not rooted in personal weight history may be more treatable in bulimic patients. As a result, DTBT might be well suited for clinical interventions. Additionally, relinquishing radical dieting is key to making progress with CBT. If a patient remains strongly motivated to be very thin, this might work against CBT's efficacy. Therefore, DTBT might be useful in identifying bulimic individuals most appropriate for CBT treatment.

A desire to be objectively thin appears to be endorsed by individuals with bulimia, and this desire differentiates them from other individuals with eating concerns or chronic dieting such as restrained eaters. Although we do not know if a desire to be objectively thin, as measured by the DTBT, is a contributing factor to the etiology of bulimia nervosa or a consequence of the disorder, it may still be utilized in nonclinical samples to help identify individuals at the highest risk for embarking on dangerous diets. That is, normal weight women who are

not only dissatisfied with their bodies but who also score high on the DTBT might be particularly appropriate for eating disorder prevention programs.

It appears that societal preference for lean, fit female bodies should not necessarily be assumed to reflect a glorification of emaciation. It appears that drive to be objectively thin is not a significant motivator for restrained eaters and should not be considered a risk factor for normative dieting behavior. While restrained eaters do not show a drive to be objectively thin, they do indicate a desire to be somewhat thinner. The data suggest that an intervention that would teach restrained eaters to feel more confident in their ability to successfully avoid weight gain would diminish their worry about weight and fear of fatness.

It should be noted that there are some media that do, indeed, promote an ideal of extreme thinness. This may include models in the fashion world or popularized celebrities, some of whom do meet the weight criterion for anorexia nervosa based on their BMI. This influence by media outlets may actually be dangerous for women who emulate them and are predisposed to have a drive to be objectively thin.

The high endorsement rate of fear of fatness evident in bulimic patients suggests that addressing avoidance of weight gain concerns in addition to a drive to be objectively thin may be a useful technique in the treatment of bulimic individuals. This may also assist with diminishing the significant drop-out rate from treatment for bulimic patients, as it is possible that fears of weight gain may contribute to drop-out (Butryn et al., 2006).

### *6.6 Limitations*

Although we were unable to collect data from the originally proposed number of participants, the effects that were examined were powerful enough to be significant despite a somewhat smaller sample size.

We were unable to assess dieting motivation in participants with a BMI outside the normal weight range, including anorexic patients. It would be very interesting to assess dieting motivation for bulimic patients and restrained eaters who are above normal weight to see how they score on the three dieting motivation measures relative to normal weight women studied here.

The sample used in this study included patients with a diagnosis of both BN and EDNOS-BN. Classification as EDNOS-BN required that patients met subclinical criteria for BN where binge eating and other compensatory mechanisms occur at a frequency of less than twice per week for a duration of less than three months or the use of compensatory mechanisms occurs only after eating small amounts of food (subjective binge eating). The results indicated that inclusion of a subclinical group of bulimic patients with a diagnosis of EDNOS-BN spectrum did not result in any differences on BMI or dieting motivation between the BN and EDNOS-BN group. Therefore, the data suggests that EDNS-BN patients are comparable to BN on the relevant characteristics and can be combined with clinical samples of those diagnosed with BN.

### *6.7 Future Directions*

The DTBT appears to do an adequate job of measuring the defined construct. Content validity and internal consistency were evaluated in this study

and judged to be adequate. Content validity was evaluated by originating the items for this measure and having experts rate these items as suitable for the defined construct. A high Cronbach's alpha suggested that the items in this measure form a single construct. Further utilization of the DTBT is necessary to investigate fully the psychometric properties of this measure.

It would be beneficial for future administration of the DTBT to become computerized. Computerization would increase participant accuracy and ease of use by allowing the individualized objectively thin weight each item references to be automatically calculated and inserted into the appropriate questions. This would minimize any confusion on behalf of the participant in regard to what weight the answers should refer to.

Data on dieting motivation for bulimic individuals collected in this study represents a single time point prior to admission into an intensive outpatient treatment program for eating disorders. It would be valuable to have information about these dieting motivations during the course of treatment and at treatment completion. This would enable the investigators to determine whether motivations for dieting are static factors or change with the course of treatment. If these motivations for dieting were dynamic, it would be informative to know which motivators for dieting predict treatment completion, symptom improvement, and relapse.

It would be valuable to compare the results of explicit measures on motivations for dieting, like the ones used in this study, with more implicit

measures of similar constructs. It is possible that explicit and implicit patterns of dieting motivation may differ in certain groups of individuals.

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## APPENDIX A: *Drive to be Thin Measure – ‘Weight Preferences Scale’*

- 1) What is your **current** weight? \_\_\_\_\_lbs
- 2) What is your current height (without shoes)? \_\_\_\_feet \_\_\_\_inches
- 3) If you could pick any weight that you could stay at permanently, what weight would that be? \_\_\_\_\_lbs

**SECTION 1: The first section is an exercise in which participants refer to the table provided (Metropolitan ideal height/weight table) to calculate their tabled (ideal) and changed (changed by 15%) weight.**

*Please look at the table below. In Column A you will find a list of heights. Please find your height on that list. In column B, you will find a list of weights. Please find the weight that corresponds to your height in Column A (e.g. if you are 5"5 you would write down 137 lb). Please write down this weight from Column B here \_\_\_\_\_lbs  
In this questionnaire, this weight will be referred to as your **tabled** weight for your height:*

*Look at the table again. In Column C, you will find another list of weights. Please find the weight in Column C which corresponds to your height in Column A (e.g. if you are 5"5 you would write down 116.5).*

*Please write down this weigh from Column C \_\_\_\_\_lbs  
This weight will be referred to as your **changed** weight. Your changed weight represents a weight that has been changed by a set amount.*

*We want to ask you some questions about how you feel about being at certain weights. In the questions below, we will be referring to both your **tabled** and your **changed** weights. When we refer to these weights, we want you to think of the ones you have written down above in each category. Of course, your current body weight may be at, below, or above either the tabled or changed weight.*

**SECTION 2: The second section includes general questions about desire to be at certain weight levels.**

*Read each of the following statements carefully. Use the scale provided below to say whether you agree to disagree with each of the statements.*

**strongly disagree**    **disagree**            **neutral**            **agree**            **strongly agree**  
1                            2                            3                            4                            5

- 4) I would like to be at my tabled body weight.
- 5) I would like to be at my changed body weight.
- 6) I would like to weigh 5 pounds less than I currently weigh.
- 7) I would like to weigh 10 pounds less than I currently weigh.
- 8) I would like to weigh 20 pounds less than I currently weigh.
- 9) If you had to choose one of the following weights to stay at permanently which weight would you choose?  
\_\_\_\_\_lbs (current)                    \_\_\_\_\_lbs (tabled)                    \_\_\_\_\_lbs (changed)

**SECTION 3: SECTION 4:**

While filling out the questions below (#10-25), we will be referring to your **CHANGED** weight, which you have written down above. In the blank spaces in the items below, please think about the **CHANGED** weight you have calculated. Read each of the following statements carefully. Use the scale provided to say whether you agree to disagree with each of the statements.

**IF YOUR CURRENT WEIGHT IS BELOW THE TABLED WEIGHT, SKIP THE REMAINING ITEMS. .**

<b>strongly disagree</b>	<b>disagree</b>	<b>neutral</b>	<b>agree</b>	<b>strongly agree</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

- 10) I would do almost anything to weigh approximately \_\_\_\_ lbs.
- 11) I believe I would be happier if I weighed approximately \_\_\_\_ lbs.
- 12) I think all the time about how I can get close to weighing approximately \_\_\_\_ lbs.
- 13) Approximately \_\_\_\_ lbs is the best size for me.
- 14) I would be extremely dissatisfied with my body if I weighed approximately \_\_\_\_ lbs.
- 15) One of my biggest goals is to weigh approximately \_\_\_\_ lbs.
- 16) I am very highly motivated to weigh approximately \_\_\_\_ lbs.
- 17) One of my biggest fears is not weighing approximately \_\_\_\_ lbs.
- 18) I exercise a lot in order to weigh approximately \_\_\_\_ lbs.
- 19) Other people will like me more if I weigh approximately \_\_\_\_ lbs.
- 20) I would not like myself better if I weighed approximately \_\_\_\_ lbs.
- 21) I limit the amount of food I eat in order to weigh approximately \_\_\_\_ lbs.
- 22) I spend a lot of time doing things in order to weigh approximately \_\_\_\_ lbs.
- 23) I have gone on weight-loss diets to try to get my weight close to \_\_\_\_ lbs
- 24) I have sometimes used unhealthy behaviors (e.g. fasting, using diet pills) to get my weight close to \_\_\_\_ lbs.
- 25) Have you ever dieted in order to weight less than this weight? \_\_\_\_ YES \_\_\_\_ NO

Weight Preferences Scale Reference Table

A		B	C
HEIGHT		TABLED WEIGHT	CHANGED WEIGHT
		LBS	LBS
Feet	Inches		
4	9	<b>115</b>	97.5
4	10	<b>117</b>	99.5
4	11	<b>120</b>	102
5	0	<b>122</b>	103.7
5	0	<b>125</b>	106.3
5	2	<b>128</b>	108.8
5	3	<b>131</b>	111.4
5	4	<b>134</b>	113.9
5	5	<b>137</b>	116.5
5	6	<b>140</b>	119
5	7	<b>143</b>	121.6
5	8	<b>146</b>	124.1
5	9	<b>149</b>	126.7
5	10	<b>152</b>	129.2
5	11	<b>155</b>	131.8

\* Weight in Pounds (In Indoor Clothing)

\*Medium Frame size

Source of basic data Build Study, 1979. Society of Actuaries and Association of Life Insurance Medical Directors of America, 1980.

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## APPENDIX B

### EDI-2 Drive for Thinness Subscale

For each item, decide if the item is true about you

- (a) ALWAYS
- (b) USUALLY
- (c) OFTEN
- (d) SOMETIMES
- (e) RARELY
- (f) NEVER

1. I eat sweets and carbohydrates without feeling nervous.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
2. I think about dieting.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
3. I feel extremely guilty after overeating.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
4. I am terrified of gaining weight.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
5. I exaggerate or magnify the importance of my weight.
  - a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
6. I am preoccupied with the desire to be thinner.
  - a. Always
  - b. Usually

- c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never
7. If I gain a pound, I worry that I will keep gaining.
- a. Always
  - b. Usually
  - c. Often
  - d. Sometimes
  - e. Rarely
  - f. Never

**APPENDIX C****Goldfarb's Fear of Fatness Scale****GFFS**

Please read each of the following statements and select the number which best represents your feelings and beliefs.

- 1**      **very untrue**
- 2**      **somewhat untrue**
- 3**      **somewhat true**
- 4**      **very true**

1. My biggest fear is becoming fat. \_\_\_\_\_
2. I am afraid to gain even a little weight. \_\_\_\_\_
3. I believe there is a real risk that I will become overweight someday. \_\_\_\_\_
4. I don't understand how overweight people can live with themselves. \_\_\_\_\_
5. Becoming fat would be the worst thing that could happen to me. \_\_\_\_\_
6. If I stopped concentrating on controlling my weight, chances are I would become very fat. \_\_\_\_\_
7. There is nothing that I can do to make the thought of gaining weight less painful and frightening. \_\_\_\_\_
8. I feel like all my energy goes into controlling my weight. \_\_\_\_\_
9. If I eat even a little, I may lose control and not stop eating. \_\_\_\_\_
10. Staying hungry is the only way I can guard against losing control and becoming fat.  
\_\_\_\_\_

**APPENDIX D****Herman & Polivy's Restraint Scale****REVISED RESTRAINT SCALE**

Each question below is followed by a number of answer options. After reading each question carefully, choose the one option which most applies to you. Read each one carefully and circle the number that best describes you in general.

1. In general, how often are you dieting?  
1) Never    2) Rarely    3) Sometimes    4) Often    5) Always
  
2. Would a weight fluctuation of 5 pounds affect the way you live your life?  
1) Not at all    2) Slightly    3) Moderately    4) Very Much
  
3. Do you eat sensibly in front of others and splurge alone?  
1) Never    2) Rarely    3) Sometimes    4) Often    5) Always
  
4. Do you give too much time and thought to food?  
1) Never    2) Rarely    3) Sometimes    4) Often    5) Always
  
5. Do you have feelings of guilt after overeating?  
1) Never    2) Rarely    3) Sometimes    4) Often    5) Always
  
6. How conscious are you of what you are eating?  
1) Not at all    2) Slightly    3) Moderately    4) Very Much

7. What is the maximum amount of weight (in pounds) you have ever lost in one month?
- 1) 0-4      2) 5-9      3) 10-14      4) 15-19      5) 20+
8. What is your maximum weight gain within a week?
- 1) 1      2) 1.1-2      3) 2.1-3      4) 3.1-5      5) 5.1+
9. In a typical week, how much does your weight fluctuate?
- 1) 1      2) 1.1-2      3) 2.1-3      4) 3.1-5      5) 5.1+
10. How many pounds over your ideal weight were you at your maximum weight?
- 1) 0-1      2) 2-5      3) 6-10      4) 11-20      5) 21+

## APPENDIX E

### Dieting and Weight History Questionnaire

1. What is the most you have ever weighed since reaching your current height? (do not count any weight gains due to medical conditions or medications)? The most I have weighed since reaching my current height is:

\_\_\_\_\_ pounds

2. What is your current weight? \_\_\_\_\_ pounds

3. Please determine the difference between your answer to number 1 and number 2. If this difference is less than 5 lbs. skip this item and go on to item 4. If this difference is 5 lbs. or more, indicate which of the three following statements best describe this difference:

- A. The difference between my highest weight and my current weight exists because I lost weight on purpose.
- B. The difference between my highest weight and my current weight exists because I lost weight even though I wasn't trying to.
- C. I'm not sure why I weigh less than I once did.

4. For about how long have you been at or close (within 2 lbs.) to your present weight? \_\_\_\_\_

5. Are you currently on a diet? (circle one) Yes No (If no, go to number 7).

6. Are you currently dieting to lose weight or to avoid gaining weight? (circle one)

To lose weight (go to #8)      To avoid gaining weight (go to #8)

7. Have you ever been on a diet to control your weight? Yes No (skip numbers 8, 9, and 10 and go on to the next questionnaire)

8. About how old were you when you went on your first diet? \_\_\_\_\_ years old

9. Please estimate as best you can the number of times in your life you have dieted and purposely lost the amount of weight listed.

How many times in your life have you dieted and lost:

1-4 pounds? \_\_\_\_\_ times

5-10 pounds? \_\_\_\_\_ times

11-20 pounds? \_\_\_\_\_ times

21 or more pounds? \_\_\_\_\_ times

10. Think about the diet(s) you have been on and please read all five answers below. Then circle the one item that best describes why you have gone on diets:

- a. I have gone on diets entirely because I want to be thin
- b. I have gone on diets mostly because I want to be thin but also to avoid becoming fat
- c. I have gone on diets equally because I want to be thin and I want to avoid becoming fat

- d. I have gone on diets mostly because I want to avoid becoming fat but also because I want to be thin
  - e. I have gone on diets entirely because I want to avoid becoming fat
11. Do you currently engage in binge eating, by which we mean eat a large amount of food while feeling out of control?
- Yes \_\_\_\_\_
- No \_\_\_\_\_
12. If you answered yet to #11: How often do you currently engage in binge eating?
- a. Less than once a week
  - b. 1-2 times a week
  - c. 2-5 times a week
  - d. more than 5 times a week