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By

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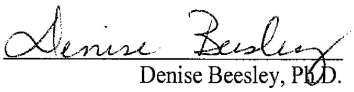
AMONG OVERWEIGHT AND OBESE INDIVIDUALS

A DISSERTATION APPROVED FOR THE
DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

BY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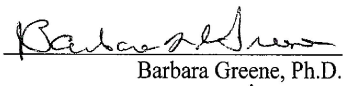
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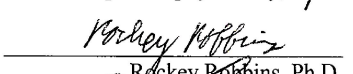
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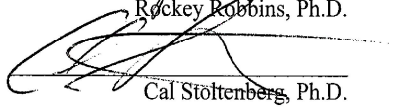
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Abstract

Two hundred and five male and female members of Taking Pounds Off Sensibly (TOPS) participated in this study of potential psychological risk factors associated with being overweight or obese. Participants completed a demographics questionnaire, the Questionnaire of Eating Disorders Diagnoses (Q-EDD), three subscales from the Eating Disorders Inventory-Third Edition (EDI-3), the Brief Symptom Inventory (BSI), and the Appearance Schemas Inventory-Revised (ASI-R). The ASI-R was not included in the analyses due to an insufficient number of individuals completing this instrument. A Two Step Cluster Analysis revealed two clusters of individuals differing across several variables including Body Mass Index (BMI), age of onset, distress experienced from being overweight, and the number of items endorsed on the BSI, EDI-3, and Q-EDD. Subsequent ANOVA and Chi-Square analyses conducted using the variables from the initial cluster analysis revealed significant differences between the clusters on all variables included in the analysis except marital status. These results suggest that there may be subgroups of individuals among the overweight/obese population based on factors previously identified in the literature. Furthermore, the results suggested that despite the heterogeneity within the overweight/obese populations, subgroups of individuals can be identified based on psychological and demographic variables.

AN EXPLORATORY STUDY OF POTENTIAL SUBGROUPS AMONG OVERWEIGHT AND OBESE INDIVIDUALS

Introduction

Kuczmarski (1992) reported that approximately 24% of men and 27% of women were overweight, with 8% of men and 11% of women meeting the criteria for obesity. More recently, it has been estimated that approximately one third to one half of the population of the United States is overweight (Oakes & Slotterback, 2001). Some evidence suggests that these rates may be even higher among individuals with severe or chronic mental health problems (Daumit et al., 2003). These alarming statistics have led to obesity becoming a major health priority in the United States over the last twenty years (Cogan & Ernsberger, 1999).

There is speculation that this major health problem is due in part to societal changes (e.g., the increasing number of dual earner families, single parent families, etc.) that have increased the demands on our time. To aid in dealing with these demands, increases in technology have served to make life more convenient for individuals who already have little free time. One such change has been increased access to convenient foods. Often these foods take little or no time to prepare, are cheaper, have a higher fat content, and are higher in calories. For many people, this change in diet has likely contributed to weight gain, which can lead to becoming overweight and/or obese.

The conditions of being overweight and obese typically occur when caloric intake exceeds output of energy. This difference between intake and output is a

significant contributor to the rising prevalence rates of overweight and obesity. Overeating, or taking in more calories than one needs to maintain their current weight, is a term used to help describe the imbalance between caloric intake and energy output. As societies advance, less energy is expended in the work place or during free time. This may result in reduced energy output and eventually to the rising prevalence rates of overweight and obesity.

It has been well-documented that people who are obese and/or overweight frequently suffer in many life domains, e.g., education, employment, healthcare, and social involvement (Miller, 1998). Overweight and obesity are health concerns that have begun to affect people's lives at an earlier age and have contributed greatly to the rising costs of health care in the United States. The increased occurrence of a variety of co- morbid physical disorders such as hypertension, coronary heart disease, stroke, gallbladder disease, osteoarthritis, type 2 diabetes mellitus, and several types of cancers pose life threatening risks to overweight individuals (Aronne, 2001). Many factors have been found to play a role in obesity, including a broad range of genetic and environmental factors (Hodge & Zimmet, 1994 as cited in Wing & Klem, 1997).

In addition to the health problems associated with weight, individuals who are overweight or obese may also suffer a broad range of social consequences as a result of their weight status. While social taboos tend to discourage gender stereotyping, racism, and many other prejudices that exist in our culture, judgmental attitudes toward those who are overweight/obese seem somewhat more acceptable (Wadden, Womble, Stunkard, & Anderson, 2002). The conditions of being overweight and/or

obese appear to be topics that many find difficult to discuss openly. It is one of those differences between people that is not perceived in the same light as race, gender, or ethnicity.

A common perception is that weight can and ought to be controlled. Thus, those who are unable to maintain normal weight are often believed to lack self-control or to choose not to exercise self-control (Goodrick, 1999). Overweight and obese persons are also more likely to face challenges such as basic physical accommodations (e.g., comfortable seating, airplane seatbelts that fit, etc.) in routine daily life that normal individuals do not have to face (Stunkard & Wadden, 1992). Studies have documented society's negative perceptions of obese individuals. Typically obese persons are rated as less likable and/or lazier than normal weight individuals (Brownell & O'Neil, 1993). The challenges and stigmatization that accompany overweight and obesity likely contribute to the personal and social distress these individuals experience (Cogan & Ernsberger, 1999).

Psychological Correlates

The relationship between the conditions of being obese and/or overweight and health risks has been well-documented (Black, Goldstein, Mason, Bell, & Blum, 1992; Friedman & Brownell, 1995; Roberts, Kaplan, Shema & Strawbridge, 2000). However, much less is known about the psychological correlates of being overweight and/or obese. Clearly, some individuals experience distress related to their weight. Furthermore, there is a not-so-subtle assumption in our culture that individuals should be able to control their behavior, implying that the failure to control one's weight represents a personal failure of sorts (Goodrick, 1999).

Interestingly, little research has been published on the potential consequences of being overweight and/or obese on psychological well-being. The DSM-IV-TR no longer considers overweight and obesity to be psychological disorders in and of themselves. The condition of being overweight and/or obese can only be diagnosed if there is a clear psychological impact for an individual (DSM-IV-TR, 2000). This implies that being overweight and/or obese are not inherently linked to psychological mechanisms. Likewise, the most common treatments for overweight and obesity, which include weight loss programs, diet changes, pharmacotherapy, and surgery, also suggest a strong physical and/or biological link. Treatment programs often encourage exercise and a change in eating habits, but rarely focus on the psychological aspects of being overweight or obese (Ramirez & Rosen, 2001). Perhaps this is inevitable, even necessary, in light of our limited understanding of the psychological factors associated with being overweight and/or obese.

Based on the current literature, few if any systematic or meaningful psychological differences between normal weight and overweight/obese individuals are apparent. Friedman and Brownell (1995) reviewed the literature related to the psychological correlates of obesity and noted that research had not established a clear pattern of relationship between increased psychopathology and obesity among individuals in the general population. Findings such as these have led some researchers to conclude that obese persons are at no greater risk for psychological suffering than the general population.

In contrast to the findings from the general population, studies involving obese individuals seeking treatment have been more consistent in demonstrating a

potential link between obesity and psychological suffering. Friedman and Brownell (1995) conducted a meta-analysis of studies assessing depression among those seeking treatment compared with a general population control group. Overall, these studies were more suggestive of the presence of elevated depression scores among those seeking treatment (Friedman & Brownell). Others have also found higher levels of psychological suffering among those seeking treatment. Ross (1994) examined data from a national telephone survey and concluded that overweight individuals who dieted had a higher risk for depression than those who were overweight and not dieting. Further, studies on surgical candidates for obesity have indicated that the morbidly obese have a higher level of psychopathology than the general population (Hopkinson & Bland, 1982).

Clearly, the inconsistent findings reported in the literature could lead to the conclusion that there are no consistently identifiable psychological correlates of being overweight and/or obese. However, it has been speculated by some that methodological concerns in many studies have contributed to the inconsistent findings involving the hypothesized psychological correlates of overweight and/or obesity (Carpenter, Hasin, Allison, & Faith, 2000; Friedman & Brownell, 1995; Goldsmith et al., 1992). Following their review of the literature, Friedman and Brownell (1995) concluded that serious limitations in the conceptual and methodological bases of earlier studies required a revisitation of the conclusions advanced by authors of those earlier studies:

> Early studies sought to identify personality and psychopathology variables related to the etiology of obesity, not the effects of obesity on the individual.

> The results of these studies point to clear heterogeneity, both in etiology and in consequences of obesity. However, the inconsistency across studies was used as grounds to conclude that obesity does not increase the likelihood of psychological problems (p. 4).

The many methodological concerns surrounding studies in this area leave many unanswered questions regarding the impact of being obese on psychological well-being (Friedman & Brownell, 1995). Several specific methodological concerns have been noted in the literature as contributing to the inconsistent findings between the hypothesized psychological correlates of being overweight and/or obese (Carpenter et al., 2000; Friedman & Brownell, 1995; Goldsmith et al., 1992).

The first methodological concern stems from the comparison of obese individuals and normal weight individuals, which is based on the assumption that the overweight and obese populations constitute a homogeneous group (Friedman & Brownell, 1995; Stunkard & Wadden, 1992). This premise suggests that overweight and obese individuals are expected to have the same potential for psychological distress regardless of their weight status. However, individuals may meet criteria for overweight, obesity, or morbid obesity, and these may have differing consequences for different individuals (Kuzamarski, 1992). Therefore, the finding of no differences between obese and normal weight individuals might be due to the failure to consider potential differences within the overweight and/or obese populations (Friedman & Brownell). Examples of potentially relevant sources of variability within these groups include the degree of obesity, age of onset, and binge eating status.

A second methodological concern relates to the highly variable ways in which psychopathology constructs were defined and measured in earlier studies (Friedman & Brownell, 1995). Only depression and anxiety were assessed with any consistency across studies, making them the only constructs amenable to use in meta-analysis. A third concern is that many studies examined only a single group of individuals seeking treatment versus comparing them to a control group that was not seeking treatment. Studies in which control groups have been used have included individuals from the general population or from medical settings where the characteristics of these populations were poorly understood (Friedman & Brownell, 1995). This has frequently presented challenges in interpreting the findings of these studies.

A fourth methodological concern has been the use of widely varying samples. Many studies have used samples of morbidly obese individuals who were presenting for surgical treatment. Studies of persons presenting for treatment in other medical type settings may introduce factors such as subjective health ratings that might impact results and limit the applicability of the findings. Other studies have used only individuals from the general population or individuals seeking treatment for their weight. Collapsing different weight status groups together, as well as not using matched controls, may originate from the naïve assumption that this population is homogeneous.

In addition to the above noted concerns regarding methodology, at least one author has noted that there appears to be a lack of *prospective* studies that could be used to establish a link between being overweight and/or obese and psychological distress (Roberts et al., 2000). Prospective studies are those that follow a large group

of individuals over a long period of time (Cogan & Ernsberger, 1999). Such studies may provide very helpful information regarding the onset of obesity, psychiatric history, changes in health, and changes in weight over time. Further, being able to monitor the relationship between weight change and psychological variables over time may prove very enlightening. What is clear is that some obese persons suffer psychologically; it is not clear *why* or *how* they are suffering. The lack of prospective studies can be viewed generally as yet another methodological deficit.

It has been suggested that the general failure to detect differences may be attributable to conceptual and methodological shortcomings in the early studies in this area. However, high levels of psychological distress have been observed in individuals seeking treatment for their weight. Several studies have speculated as to what factors might lead to psychological distress in overweight and/or obese individuals.

Hypotheses Regarding Risk Factors for Suffering

One hypothesis was identified by Ross (1994) who examined 2,020 individuals as part of a national telephone survey. Ross (1994) found evidence to support the idea that obese individuals attempt to fit a normative appearance by dieting and become depressed. This finding suggests that just being overweight and/or obese does not necessarily mean that one will become depressed, but instead that trying to fit a normative appearance may be distressing. Dieting may cause unusual distress as the person attempts to fit in with those around him or her. This finding supports others who have suggested that dieting or restrained eating can have negative consequences for some individuals (Cogan & Ernsberger, 1999; Tiggemann,

2000). However, it is important to mention that those who are morbidly obese or have other heath complications may need to lose weight in order to improve or maintain their current levels of health. Clearly, not all instances of dieting or weight loss are harmful.

Yet another hypothesis regarding potential differences between overweight, obese, and normal weight individuals relates to how people respond to food cues in their environments. The influx of food cues that individuals are exposed to daily may be related to the increase in the number of obese persons (Oakes & Slotterback, 2001). Some researchers have hypothesized that overweight and obese persons respond more strongly to external non-food-related cues that lead to their consuming more food than normal weight individuals. Etou et al. (1989) examined 13 obese females and 13 normal weight females to assess psychomotor function and time judgments. Participants in this study were assigned tasks of tapping, manual dexterity, speed of pressing one key on a board and then another, and reproduction of tones of differing lengths. This study revealed that obese individuals were less responsive to internally cued stimuli and were more responsive to externally cued psychomotor tasks. Similarly, a study by Gardner, Reyes, Brake, and Salaz (1984) had participants reproduce brief tones of differing lengths and distinguish between the lengths of tones presented to them. These authors found that obese individuals responded more slowly to internal cues in which they had to rely on internal processes to reproduce a brief tone accurately. The results of these studies suggest that obese individuals respond more strongly to external versus their own internal

cues. Therefore, environments that are rich in external food-related cues may cause these individuals to eat when they have no internally cued appetite.

Other studies have focused on food-related cues and how those impact appetite. Oakes and Slotterback (2001) found that verbal food cues increased the appetites of self-reported non-dieters; however, dieters reported decreases in appetite. In a representative sample of undergraduates, those exposed to food-related cues reported increased appetites and a greater desire to eat versus a control group not exposed to the food-related cues (Oakes & Slotterback, 2000). These findings, which contradict those regarding non-food-related cues, may suggest that viewing obesity in terms of external and internal cues may not be sufficient enough to explain differences between normal weight and overweight and/or obese individuals. Thus, this hypothesis has received less support in recent years (Chelune, Ortega, Linton, & Boustany, 1986).

A final hypothesis relates to factors that might increase the risk for psychological distress in some overweight and/or obese individuals. Fitzgibbon and Kirschenbaum (1990) indicated that it may be possible to establish subgroups of obese people according to their psychological functioning. In order to identify who might be suffering, Friedman and Brownell (1995) suggested studies that seek to identify risk factors for psychological distress among those who are overweight and/or obese. Earlier comparisons between overweight and/obese individuals and normal weight individuals typically treated the overweight and/or obese populations as homogeneous. Friedman and Brownell concluded that heterogeneity within the overweight and/or obese populations was a contributing factor to findings that have

revealed few psychological differences between overweight and normal weight individuals. Further, these authors suggested a shift in focus toward identifying which factors might lead to psychological distress in overweight and/or obese individuals.

Clearly, research that helps to distinguish those who are at risk for suffering from those who are at less of a risk is important (Friedman & Brownell, 1995). In addition, research focusing on why some people experience success and maintain initial losses after treatment and why others experience relapses is needed. Because many persons regain weight after seeking treatment, assessing the risk factors that could contribute to weight regain could be beneficial. It has been speculated that gender, the degree of obesity, dieting, cognitive differences, body image, age of onset, teasing, and binge eating are all potential risk factors that may contribute to psychological suffering (Friedman & Brownell). While it is understood that some overweight and obese persons experience depression (Ross, 1994), body image problems (Cash & Green 1986), and other psychological difficulties (Berman, Berman, Heymsfield, Fauci, & Ackerman, 1989), the nature of these relationships is not clear. A better understanding of risk factors might illuminate the relationship between being overweight/obese and psychological suffering. Next, the potential risk factors that have been identified will be discussed in more detail (Friedman & Brownell, 1995; Brownell & Wadden, 1992).

Risk Factors

One such risk factor is gender, since women seek treatment for their weight more often than men do (Goldstein, Goldsmith, Anger & Leon, 1996). This finding is

interesting given that women and men have similar prevalence rates for obesity (Flegal, Carroll, Kuczmarski, & Johnson, 1998). The fact that women seek treatment more often than men, however, does not necessarily indicate that women are at greater risk for developing psychological distress related to obesity, but might suggest that women are more likely than men to seek external support for weight-related issues. Results of some studies suggested that men and women may experience their weight differently (Carpenter, et al., 2000; Crisp, Queenan, Sittampaln, & Harris, 1980; Herpetz et al., 2000). These differences could be related to societal pressure for males to increase their body size as a sign of greater masculinity and might suggest that males are more likely to lose weight if they become depressed. A second factor could be the degree of overweight and/or obesity that an individual experiences (Friedman & Brownell, 1995). Hutzler, Keen, Molinari, and Carey (1981) conducted a study on 135 individuals presenting for obesity surgery. The results indicated that 60% of their sample elevated one scale from the MMPI. The mean profiles for the men and women in this sample suggested a primary elevation of the Pd scale. Even though these findings suggest higher psychopathology in these samples, the MMPI was intended for psychiatric populations, and, thus, these findings should be interpreted with caution.

A third suspected factor in the risk for psychological distress among overweight and/or obese persons is dieting and/or dietary restraint. Cogan and Ernsberger (1999) stated that dieting may have psychological consequences and cause a preoccupation with food. A related focus of research has been weight fluctuation, which is a common occurrence for many people who battle weight problems (Foreyt

et al., 1995). Foreyt et al. found that non-fluctuators had a higher sense of well-being and higher self-efficacy related to self-control around food. Fluctuators reported more urges than non-fluctuators to overeat when experiencing negative emotions (Foreyt et al.).

Fourth, body image concerns and cognitive differences from normal weight individuals may exist among the overweight and/or obese. Overweight women have been found to be more dissatisfied with their appearance than normal weight and underweight women (Cash & Green, 1986). Further, some evidence suggests that individuals still report body image concerns even after losing weight (Ramirez & Rosen, 2001). This suggests that there is some cognitive element to body image concerns that is not necessarily solved through weight loss. A fifth factor may be the age at which one becomes overweight or obese. Adults who were obese as children may have lower body images than those with adult onset obesity (Stunkard & Wadden, 1992). This might be related to the stigma overweight and/or obese children experience and the ease with which messages can be internalized at younger ages. Sixth, the experience of being teased about one's weight may also represent a risk factor for psychological suffering. It is believed that teasing may be damaging to one's self-concept (Friedman & Brownell, 1995). Adults who were teased about their weight as children have been suspected to be at greater risk for body image disturbances (Cash, Winstead, & Janda, 1986). In addition, the frequency of being teased as a child has been shown to be related to obese females' future perceptions of their bodies (Grilo, Wilfley, Brownell, & Rodin, 1994).

A seventh risk factor is binge eating. The prevalence of binge eating among those seeking treatment for obesity has been estimated to be around 30% (Spitzer et al., 1992). Clearly, with the high prevalence rates of binge eating in the treatment population, better assessment is needed to identify those who binge eat. Further, research focusing on binge eating has suggested that higher levels of mental distress exist among those who binge eat (Kaplan & Ciliska, 1999). Lower levels of self-esteem and greater dysphoria have also been associated with binge eaters (Striegel-Moore, Wilson, Wilfley, Elder & Brownell, 1998).

When the potential risk factors for suffering among the overweight and obese are identified together, it is easy to see that there may be substantial overlap among risk factors. Teasing, age of onset, and body image appear to be related in that the experience of being teased as a child can disrupt how one views his or her outward appearance. This can happen in both males and females. Although the reported frequency of teasing may not be very high among those who have been teased, as many as half may report dissatisfaction with their bodies (Cash et al., 1986). Further, females are more likely to report this type of dissatisfaction with their bodies. However, it is not clear whether teasing may be more detrimental to females. The degree of overweight or obesity of an individual appears to have an impact on psychological functioning, with the morbidly obese potentially having the highest risk for psychological suffering. An individual's perception of his or her outer self can also be impacted by dieting and dietary restraint. Dieters may be more likely to develop dysfunctional cognitions than non-dieters (Tiggemann, 2000). Binge eating

also represents a significant risk to those seeking treatment, and further research is needed to clarify how binge eating may relate to the other factors mentioned.

Thus, a single approach to treating the overweight and obese conditions appears to be insufficient, and greater attention is needed when assessing who might be suffering psychologically (Brownell & Wadden, 1992). If risk factors that contribute to psychological distress among overweight and obese individuals are discovered, an assessment of the interactions of risk factors for the individual seems relevant (Friedman & Brownell, 1995; Brownell & Wadden). Clearly, a person's weight status is not their only identity as a person, and other explanations for changes in a person's mood and attitudes about appearances are possible. Individuals have interactions everyday with others, and these interactions do not all revolve around weight-related issues. Familial discord, job difficulties, or problems in school are just a few of the many alternative explanations that could explain why someone is experiencing distress. Therefore, caution should be exercised to avoid the inherent assumption that someone who is distressed and happens to be overweight feels this way because of their weight.

Clearly, the conditions of being overweight and obese are complex, multidimensional issues. There are no indications that the prevalence of obesity is decreasing or even remaining constant. In fact, studies are showing that the number of persons who are fitting the overweight categories is increasing. This is leading many people to seek treatment for their weight at this time; however, treatments for obesity have been shown to be effective in facilitating weight loss in the short term but fall short with regard to participants' ability to maintain lost weight (Hutzler et. al,

1981; Perri et al., 2001). This research could contribute to our ability to identify risk factors that may contribute to weight regain after treatment. In addition, many people experience psychological distress as a result of their weight status and the current understanding of who might be at risk to experience weight related distress is poorly understood. Clearly, research that helps to distinguish those who are at risk for suffering from those who are at less of a risk is important (Friedman & Brownell, 1995). This study is hypothesized to assist in determining who might be at risk for psychological distress among those seeking treatment for their weight. If factors that appear to increase the risk for psychological distress among overweight and/or obese individuals are found, then treatments can be tailored to include interventions that relate to these factors. The intent of such interventions is not to focus on treating the distress, but to improve treatment protocols addressing individual treatment. In general, this research could help providers determine who might benefit from treatment, how to better tailor treatments to the individual, and who might be at risk for relapse after treatment is discontinued.

Consequently, the purpose of the current study is to explore whether or not select psychological and demographic dimensions can be used to identify meaningful subgroups among a sample of overweight and obese individuals seeking treatment for weight loss. It is hoped that this study may contribute to our understanding of potential factors that might differentiate among overweight and/or obese individuals who are seeking treatment for their weight. The specific question to be addressed in this study is:

Can meaningful subgroups of overweight and obese persons be identified based on their scores on a select group of psychological and demographic dimensions? Specifically, these dimensions will include three scales of the Eating Disorder Inventory-3 (EDI-3), the nine scales of the Brief Symptom Inventory (BSI), the Questionnaire of Eating Disorders Diagnoses (Q-EDD), and the two scales of the Appearance Schemas Inventory-Revised (ASI-R).

Method

Participants

Five hundred packets of instruments were mailed out to members of a weight loss support group called Taking Off Pounds Sensible (TOPS) in two Southern states. 256 of the packets were filled out and returned for a 52.1% response rate. Of these 256 packets, 205 were included in the analyses. Fifty-one packets were excluded for having missing data (i.e. weight) or if the participants Body Mass Index (BMI) was below the cutoff for being overweight (BMI < 25.1). In addition a significant number of participants did not complete the Appearance Schemas Inventory-Revised (ASI-R) because it was printed on the front and back of one page rather than on separate sheets of paper. Therefore, this instrument was not included in the analysis. Participants were distributed across gender as follows: 7 males (3.4%) and 198 females (96.6%). The participants ranged in age from 21 to 89 years, with a mean age of 59.54 years and a median age of 61 years. Participants were distributed across education levels as follows: 3 junior high or less (1.5%), 3 high school freshman (1.5%), 4 sophomores (2.0%), 4 juniors (2.0%), 88 seniors (42.9%), 25 college freshman (12.2%), 17 sophomores (8.3%), 10 juniors (4.9%), 21 seniors (10.2%), and 30 with post college work (14.6%). The ethnic background of the research sample was 94.1% Caucasian/White, 1% Hispanic/Latino/Mexican American, 4.4% American Indian, and .5% Other. Participation in the study was anonymous and voluntary, and the participants were offered the chance to win one of four $50 gift certificates as an incentive for participation in the study.

Terms and Definitions

The conditions of being overweight and/or obese refer to the ratio of height to weight in an individual. However, complete assessment of individuals presenting with weight problems should also involve investigating the psychological and/or specific eating difficulties of these individuals. The condition of being overweight has been described as having excess body weight (Foreyt, Goodrick, & Gotto, 1981; National Institutes of Health [NIH], 1998). For the purposes of this study Body Mass Index (BMI) will be used to determine weight status. BMI is a person's weight in kilograms divided by the person's height in meters squared (kg/m^2).

Terms such as *overweight* and *obesity* are quite often used interchangeably in the literature (Kuzmarski, 1992); however, for the purposes of this paper, each of these terms will have a specific and distinct meaning. The term overweight will be used to reflect BMI scores ranging from 25-29.9 kg/m^2, while obesity will be defined as a BMI score greater than or equal to 30 kg/m^2 (NIH, 1998).

Instruments

Demographic Questionnaire. Demographic items from the Questionnaire of Eating Disorders Diagnoses (Q-EDD; Mintz, O'Halloran, Mulholland, & Schneider, 1997) was utilized to collect information related to participant's gender, age, education level attained, race, current weight, height, body frame and perceived ideal body weight. Questions were also added to address additional background information such as SES, age of onset of obesity, etc.

Teasing. Despite the fact that little is known about the effects of teasing on those who are overweight and/or obese (Grilo et al., 1994), teasing is believed to be

damaging to one's self concept (Friedman & Brownell, 1995). Therefore, several variables were included in the demographics questionnaire regarding teasing. Participants were asked to answer yes or no regarding whether or not they had experienced teasing as a child regarding their weight or whether or not they had experienced current teasing regarding their weight. If they answered yes to those questions, they then had to rate the level of distress they experienced from either childhood or current teasing on a scale ranging from 1-7.

Eating Disorder Inventory-3. The Eating Disorder Inventory-3 (EDI-3; Garner, 2004) was used to assess psychological and behavioral symptoms reported by participants. The EDI-3 is a 91-item, self-report instrument containing twelve scales and six composites (Garner). Three of the scales, including Bulimia are described as risk scales for developing eating disorders while the other nine scales are described as psychological scales that also are relevant to eating disorders (Garner). Items are presented on a 6-point scale. Only three scales have been used in this study: "(a) Low Self-Esteem (LSE) – 'measures the basic concept of negative self-evaluation…targeting affect laden constructs related to feelings of insecurity, inadequacy, ineffectiveness, and lack of personal worth'; (b) Bulimia (B) – 'the tendency to think about, and to engage in, bouts of uncontrollable overeating'; (c) Interpersonal Insecurity (II) – 'consists of seven items assessing discomfort, apprehension, and reticence in social situations. It focuses particularly on difficulties expressing personal thoughts and feelings with others'" (pp. 14-15).

Cronbach's coefficient alphas for the three scales were: LSE (.89 on a sample of adults from the U.S.), B (.88 on a sample of individuals with Bulimia Nervosa),

and II (.84 on a sample of adults from the U.S.) (Garner, 2004). Cronbach's alphas for the current study were LSE (.88), II (.83), and B (.81). Previous test-retest reliabilities for the three scales on a sample of 34 females with a history of eating disorder treatment were as follows: LSE (.95), B (.94), II (.94). An exploratory factor analysis conducted on the Risk Scale items revealed a three-factor model. An exploratory factor analysis conducted on the Psychological Scale items revealed an eight-factor model. The EDI-3 correlations with their respective scales from the EDI-2 were as follows: LSE (.95), B (.73), II (.85), suggesting that the EDI-3 is consistent with the EDI-2 in assessing similar constructs. The EDI-3 correlations with the Bulimia Test-Revised (BULIT-R) were as follows: LSE (.57), B (.81), II (.27) (Garner). Convergent and discriminant validity is also suggested in correlations between the EDI-3 and the Dutch version of the SCL-90.

The Brief Symptom Inventory. The Brief Symptom Inventory (BSI; Derogatis, 1993) is a 53-item, self-report measure generating scores on 9 primary symptom dimensions (Somatization (SOM), Obsessive-Compulsive (O-C), Interpersonal Sensitivity (I-S), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic Anxiety (PHOB), Paranoid Ideation (PAR), and Psychoticism (PSY)). The BSI also has three global indices (Global Severity Index (GSI), Positive Symptom Index (PST), and Positive Symptom Distress Index (PSDI)). The BSI requires that the participants rate each item as it applies to them on a 5-point scale ranging from *not at all* to *extremely*.

Cronbach's alphas for a sample of 719 psychiatric outpatients on the 9 primary symptom dimensions were as follows: SOM (.80), O-C (.83), I-S (.74), DEP

(.85), ANX (.81), HOS (.78), PHOB (.77), PAR (.77), and PSY (.71) (Derogatis, 1993). Cronbach's alphas for the current sample were: SOM (.85), O-C (.86), I-S (.85), DEP (.87), ANX (.83), HOS (.76), PHOB (.76), PAR (.79), PSY (.76), and GSI (.97). Test-retest reliabilities on 60 outpatients who were tested over a two week period were as follows: SOM (.68), I-C (.85), I-S (.85), DEP (.84), ANX (.79), HOS (.81), PHOB (.91), PAR (.79), PSY (.78), GSI (.90), PST (.80), and PSDI (.87). The test-retest reliabilities indicate that multiple administrations of the BSI over time provide consistent results.

Convergent validity was shown through a comparison of the BSI items from the Symptom Checklist 90, the MMPI clinical scales, the Wiggins content scales from the MMPI, and Tryon cluster scores (Derogatis, Rickels, & Rock, 1976). Further, correlations between the SCL-90-R and the BSI in a sample of 565 psychiatric outpatients revealed correlations ranging from .92 to .99, indicating that both instruments were assessing much the same constructs. Construct validity was illustrated through a principal components analysis that revealed nine factors that accounted for 44% of the variance. Derogatis (1993) reported that the only factor not to be revealed in the principal components analysis was the I-S dimension and noted that this might have been due to the smaller number of items that made up that dimension.

Questionnaire for Eating Disorders Diagnoses. The Questionnaire for Eating Disorders Diagnoses (Q-EDD; Mintz et al., 1997) consists of items that assess the frequency of self-reported eating behaviors (e.g., binge eating episodes) and items that distinguish between eating disordered and non-eating disordered individuals.

The Q-EDD is scored based on decision rules that place individuals either in an eating disordered or non-eating disordered category. Following this categorization, a further breakdown of the eating disordered group into six diagnostic categories is possible. Two of these categories include the DSM-IV diagnoses for bulimia and anorexia (which can be further broken down into DSM-IV subtypes). Four of these categories relate to the Eating Disorder Not Otherwise Specified category (EDNOS) (subthreshold bulimia, menstruating anorexia, nonbinging bulimia, and binge eating disorder). The non-eating disorder category can be subdivided into either symptomatic (experiencing at least one self-reported symptom, but not meeting the requirement for a DSM-IV diagnosis) or asymptomatic (experiencing no self-reported symptoms). Inter-scorer agreement of the Q-EDD was 100% when random Q-EDDs were selected and scored. This suggests that the scoring and administration of the instrument can be mastered.

Test-retest reliabilities over a two week period were as follows: .94 for eating disordered and non-eating disordered groups and .85 for eating disordered, symptomatic, and asymptomatic groups. However, over a 1-month to 3-month time period test-retest reliabilities were not as consistent: .64 for eating disordered and non-eating disordered groups and .54 for eating disordered, symptomatic and asymptomatic groups. Criterion validity was shown through the Q-EDD categories and diagnosis made by the interviewer as well as the accuracy with which the participants were placed into diagnostic categories. The authors reported that only three participants out of 136 were classified incorrectly. Convergent validity was shown by significant agreement between the Q-EDD diagnoses and scores on the

BULIT-R and the EAT (Mintz et al., 1997). The incremental validity was demonstrated by a comparison of Q-EDD and the BULIT-R and were judged to be about equal in their abilities to categorize the participants into the correct categories.

Appearance Schemas Inventory-Revised. The revised Appearance Schemas Inventory (ASI-R; Cash, 2003; Cash, Melnyk, & Hrabosky, 2004) is a 20-item measure assessing psychological investment in one's appearance. The ASI-R was originally developed to improve upon limitations of the original 14-item ASI. The current 20-item measure was reduced from a 41-item measure that included only 5 of the original ASI items along with 40 new items. A principal components analysis of the 41-item measure revealed two factors (Self-Evaluative Salience of Appearance and Motivational Salience of Appearance).

Cronbach's alphas on a sample of 468 college women and 135 college men were as follows: Composite ASI-R (Men = .90, Women = .88), ASI-R Self Evaluative Salience (Men = .84, Women = .82), ASI-R Motivational Salience (Men = .91, Women = .90). Cronbach's alphas were not calculated for the current sample because of an insufficient number of individual completing this instrument. Convergent validity was demonstrated through Pearson correlations with seven other instruments. Positive correlations were reported between the composite ASI-R and the two components and several body image measures. Positive correlations were also reported for the composite ASI-R and the Self-Evaluative Salience component and three measures of body image among the men (Cash et al., 2004). For the men, Motivational Salience only correlated with one other measure. Negative correlations were found between the composite ASI-R and the Self-Evaluative Salience

component and a measure assessing the effects of body image on well-being among the women, while a negative correlation was found between Self-Evaluative Salience and the same measure assessing the effects of body image on well-being among the men.

Procedures

Participants were recruited by their TOPS group facilitators on a voluntary basis. Following a brief description of the study, participants were given the instruments in a white envelope. The first three sheets in the envelope consisted of (a) a consent form that explained the study, which indicated that by filling out the instruments in the packet, he/she was consenting to participate in the study, (b) a recruitment script that explained the purpose of the study, and (c) an instruction sheet for how to return the packets to the investigator. The remainder of the packet, which consisted of the instruments, was presented in a counterbalanced order. The volunteers then filled out the packet of instruments, sealed the packet, and mailed it back to the investigator. The packets were pre-labeled with postage paid. The TOPS leader then passed around a separate sign up sheet for the volunteers to write their names on for the purposes of a drawing to win one of four $50 gift certificates. This sign up sheet was placed in a separate envelope with pre-paid postage and mailed back to the investigator. Participants were directed to only write their names on the sign up sheet so that their participation would remain anonymous.

Results

Because this study was exploratory, a Two Step Cluster Analysis using Schwarz's Bayesian Criterion was conducted using several variables from the data set

to see if meaningful categories could be identified among the participants in this study. Marital status, dieting history, and the Q-EDD were included as categorical variables. BMI, distress experienced from current weight, age of onset, perceived health, distress experienced from childhood teasing, the Global Severity Index from the BSI, and the three scales from the EDI-3 were included as continuous variables. These variables were included because of their perceived importance based on the current literature, with the exception of marital status. Gender and body image, two other variables noted as being potential risk factors for psychological suffering, were not included in the cluster analysis. Gender could not be included in the analyses due to the insufficient number of males who participated in the study. Body image was also excluded, as the instrument used to measure body image, the ASI-R, was not included in the analysis. Because the study was exploratory and no apriori hypotheses were established, the statistical program was set so that the program determined the number of clusters in the data set.

Two clusters were identified as being present in the data set based on the variables chosen to be included in the analysis. Table 1 presents the cluster distribution based on these 11 variables. Sixty-two participants (30.2%) were included in the 1st cluster and 143 participants (69.8%) were included in the 2nd cluster.

Figure 1 presents a graphical depiction of the centroid distribution among the BMI scores. Cluster 1 had higher overall BMI scores with a mean of 39.10 and cluster 2 had lower scores with a mean of 33.49.

Figure 2 presents a graphical depiction of the centroid distribution among the scores for distress related to current weight. Cluster 1 reported higher distress levels with a mean of 6.23 and Cluster 2 had a mean of 4.08.

The centroid distribution for age of onset is represented in figure 3. Cluster 1 reported an earlier age of onset and had a mean age of 22.10 and cluster 2 had a mean age of onset of 30.87.

Figure 4 presents a graphical distribution of centroids for perceived health. Cluster 1 had a perceived health mean of 2.35 and cluster 2 had a mean of 2.86, indicating that those in cluster 2 were generally rating themselves as healthier than those in cluster 1.

The centroid distribution for distress experienced from childhood teasing is depicted in figure 5. Cluster 1 reported a higher level of distress and had a mean distress level of 3.95; cluster 2 had a mean distress level of 2.54.

The centroid distribution for the Global Severity Index from the BSI is presented in figure 6. Cluster 1 had reported more overall distress and had a mean of 1.24; cluster 2 had a mean GSI of .489.

Figure 7 presents the centroid distribution for the bulimia scale of the EDI-3. Cluster 1 had higher scores on the bulimia scale with a mean of 10.76 and cluster 2 had a mean bulimia score of 4.45.

Figure 8 presents the centroid distribution for the low self esteem scale from the EDI-3. Cluster 1 had a mean low self-esteem score of 9.39 and cluster 2 had a mean score of 2.34.

The centroid distribution for the interpersonal insecurity scale from the EDI-3 is presented in Figure 9. Cluster 1 had a mean interpersonal insecurity score of 11.16 and cluster 2 had a mean score of 4.61.

Table 2 presents the frequency distribution for marital status among the participants. Approximately 71% of those who were married were in cluster 2 as were 73.7% of those listed as single. Nearly 88% of those widowed were in cluster 2 as well as 50% of those who were divorced. The within cluster percentages for marital status were similar between the clusters except for the divorced group which had a higher within cluster percentage in cluster 1 than in cluster 2.

Table 3 presents the frequency distribution for dieting history. As can been seen in the table, a significantly higher percentage of persons in cluster 2 reported never having been on a diet in the last 12 month, dieted twice, or were on a continuous diet. The number of persons reporting having been on a diet once or 3 or more times in 12 months were about equal in both clusters.

Table 4 presents the frequency distribution for eating disorder diagnosis as determine by the Q-EDD. As can be seen in the table, 19 of 20 persons diagnosed with an eating disorder were in cluster 1. Cluster 2 had a higher percentage of persons who were either symptomatic or asymptomatic.

In summary, cluster 1 had higher mean scores across several continuous variables including higher BMI scores, higher distress experienced from current weight, more distress experienced from childhood teasing, higher GSI scores, and higher scores across the three variables from the EDI-3 (bulimia, low self-esteem, and interpersonal insecurity). Cluster 1 had lower mean scores on the other continuous

variables indicating an earlier age of onset for becoming overweight and/or obese and lower ratings on perceived health. In regard to the continuous variables, the within cluster percentages for marital status were similar across all groups within each cluster except for cluster 1 having a higher within percentage of divorced individuals and cluster 2 having a higher percentage of widowed individuals. In addition 19 of 20 individuals diagnosed with an eating disorder were in cluster 1.

To identify whether the means between the clusters were significantly different across the variables used in the analysis, multiple ANOVAs were conducted using the cluster as the independent variable. ANOVA analyses were chosen because of the exploratory nature of the study so that individual comparisons could be made for each continuous variable included in the cluster. It should be noted that there is an increased probability of committing a Type I error using multiple ANOVAs, however it was determined that because the study was exploratory this increased probability was acceptable.

Table 5 presents the means, standard deviations, and F ratios for cluster 1 and cluster 2 for the continuous variables used in the cluster analysis. All variables included in this analysis were significant, $p < .001$. Thus, the participants in cluster 1 had significantly higher BMIs, were significantly more distressed from their current weight, were significantly younger at the age of onset, rated themselves as having significantly poorer health, experienced significantly more distress from childhood teasing, had significantly higher GSI scores on the BSI, and had significantly higher scores on the bulimia, low self-esteem, and interpersonal insecurity scales from the EDI-3.

Table 6 presents the Chi-Square values and significance levels for the three categorical variables used in the analysis. Marital status was not significant, $\chi^2(3)$, = 7.45, p = .059. Chi-Square analyses on the variable of dieting history was significant at the .01 level, $\chi^2(4)$, = 27.69, p = .000, as was eating disorder diagnoses, $\chi^2(4)$, = 90.21, p = .000. Cluster 1 had higher percentages of individuals being on a diet either continuously or 3 or more times in 12 months, while cluster 2 had higher percentages of individuals being on a diet never, once, or twice in 12 months. In regard to eating disorder diagnoses, cluster 1 had 19 of 20 of the individuals with eating disorder diagnoses.

To assess the validity of the cluster distribution, ANOVAs were conducted comparing the means of several variables that were not part of the original analysis. Table 7 presents the means, standard deviations, and F ratios for age, how many pounds the person felt they were overweight, and the depression, anxiety, somatization, and Positive Symptom Index scores from the BSI. As can been seen in the Table 7, all 5 variables were significant, p = <.001, indicating that those in cluster 1 had significantly higher scores on all variables included in the analysis, except for age, which indicates that those in cluster 1 were significantly younger than those in cluster 2.

Discussion

It has previously been speculated that gender, the degree of obesity, dieting, cognitive differences, body image, age of onset, teasing, and binge eating are potential risk factors that could contribute to psychological suffering (Friedman & Brownell, 1995). This study was an attempt to identify subgroups or clusters of

individuals based on some of the hypothesized contributing variables that might differentiate individuals in the overweight and/or obese populations. The variables used in the cluster analysis were chosen based on findings in the literature which suggested that these variables may be important in establishing subgroups within the overweight and/or obese population as well as risk factors for psychological suffering. The results of this study appear to support the idea that there may be several contributing factors to differences among the overweight and/or obese populations. Consistent with previous findings, the current results provide additional support for comparisons within the overweight and/or obese population rather than comparing these individuals to normal weight individuals (Friedman & Brownell, 1995).

The results of the cluster analysis revealed 2 clusters of people. The first cluster of individuals was found to have higher BMI scores. Previous findings have suggested that the degree of obesity may be a contributing factor to psychological suffering (Aronne, 2001; Chelune et al., 1986; and Hutzler et al. 1981). Cluster 1 also reported experiencing more distress due to their current weight. Again this suggests that an individual's experience regarding their current weight or the degree to which that person feels overweight may be a contributing factor to differences among the overweight and/or obese populations.

Another factor hypothesized to be a risk factor for psychological suffering is an earlier age of onset (Friedman & Brownell, 1995). The individuals in cluster 1 had an earlier age of onset than those in cluster 2. This finding could indicate that those having to deal with being overweight and/or obese longer may experience a build up

of distress over time. Stunkard and Wadden (1992) reported that adults who were obese as children may have poorer body images than those with adult onset obesity.

In addition, those in cluster 1 perceived themselves as having poorer health. It is unclear whether this finding indicates that those in cluster 1 had poorer health overall or whether their distress level or perception of being overweight and/or obese had some impact on their self-reported health. Those in cluster 1 also reported experiencing more distress from childhood teasing. Despite the fact that little is known about the effects of teasing on overweight and/or obese individuals (Grilo et al., 1994), it is believed that teasing may be damaging to one's self concept (Friedman & Brownell, 1995). Finally, cluster 1 was found to have 19 of the 20 individuals diagnosed with an eating disorder. Previous findings are consistent in revealing higher levels of distress among those who binge eat than those who are non-bingers (Kaplan & Ciliska, 1999; Geliebter, Hassid & Hashim, 2001; Herpetz et al., 2000; Striegel-Moore et al., 1998; Wadden, Foster, Letizia, & Wilk, 1993).

Those in cluster 2 had several things in common including lower BMI scores, a later age of onset, lower perceived distress from current weight, greater perceived health, less distress from childhood teasing, and fewer individuals meeting the criteria for eating disorder diagnoses. The differences between the clusters were significant at the .001 level when ANOVA analyses and Chi-Square analyses were conducted.

Additionally, from a qualitative standpoint, this study also provides support for the idea that women seek support for their weight more often than men (Goldstein et al., 1996) although no comparisons could be made based on gender due to the insufficient number of males participating in the study. Additionally, conclusions

could not be reached as to why women seek support more often for their weight than men.

In regard to the psychological variables included in the analysis, the individuals in cluster 1 had higher scores on the Global Severity Index from the BSI as well as higher scores on the bulimia, low self-esteem, and interpersonal insecurity subscales from the EDI-3 than those individuals in cluster 2. These differences were significant at the .001 level when ANOVA analyses were conducted using the variables from the cluster analysis. The differences between cluster 1 and cluster 2 indicate that those individuals in cluster 1 are experiencing more distress than those in cluster 2. These findings are consistent with previous findings that have suggested that those seeking treatment may be more likely to have elevated levels of distress (i.e., depression) (Friedman & Brownell, 1995). However, conclusions as to the relationship between overweight and/or obesity and depression among those in the general population cannot be made from the current study.

The frequency distribution for marital status appeared to suggest the percentages across marital status between the clusters was similar for all status groups except for the higher percentage of divorced individuals in cluster 1. The result of the Chi-Square test of significance for marital status was not significant. This finding may serve as discriminant validity for the current study given that one would expect no differences between the clusters based on marital status. In addition, external validation procedures using variables that were not included in the original analysis also lend support to the differences found in the current study. Variables such as age, the number of pounds one perceives themself as being over their normal weight, and

variables from the BSI including depression, anxiety, somatization, and the Positive Symptom Index from the BSI were all significant. This provides further evidence for the validity of the clusters established in the analysis.

No study reviewed prior to completing this project had attempted to classify overweight and/or obese individuals into subgroups to look for risk factors for psychological suffering as suggested by (Friedman & Brownell, 1995). Many studies have attempted to identify patterns of psychological suffering in regard to depression and anxiety within the general population and among those in treatment (Friedman & Brownell). Such studies have reached various conclusions as to the effects of weight on psychological suffering (Friedman & Brownell).

Consistent with previous findings the results of the current study indicate that the degree of obesity (Aronne, 2001; Chelune et al., 1986; Hutzler, 1981), age of onset (Stunkard & Wadden, 1992), teasing (Cash et al., 1986), and binge eating (Smith, Marcus, Lewis, Fitzgibbon, & Schreiner, 1998) may all be important factors that distinguish overweight and/or obese individuals. These studies would suggest that a greater degree of obesity, an earlier age of onset, the experience of being teased, and binge eating would potentially be risk factors for psychological suffering. The current results were consistent with this hypothesis in revealing that the clusters differed significantly on several variables from the EDI-II and BSI inventories. Further, the current study clearly indicates that it may be possible to identify subgroups of overweight and/or obese individuals and possibly identify risk factors for psychological suffering.

However, it remains unclear as to which factors may be most important in distinguishing individuals into subgroups. Future studies identifying the factors that are most important in distinguishing among subgroups will be important. Conclusions as to the impact of being overweight and/or obese in terms of gender or body image could not be made in the current study due to the insufficient number of males participating in the study and due to the ASI-R not being used in the analyses.

Limitations of the Study

It should be noted that there were limitations to the current study. First, the study consisted of mostly help-seeking Caucasian/White females from one type of weight loss support group. A broader range of ethnic backgrounds as well as a more representative sample in regard to gender, and type of treatment may have been helpful. Second, a control group of overweight and/or obese individuals from the general population would have provided a comparison group as suggested in the literature. This could have helped establish if there are differences among the overweight and/or obese population in regard to those who seek treatment and those who do not. Due to these limitations, these findings may not be generalizable to the general population or to other types of weight loss support groups.

Conclusions and Implications

The findings from the current study clearly indicate that the conditions of being overweight and obese are complex, multidimensional problems. Fitzgibbon and Kirschenbaum (1990) previously indicated that it may be possible to establish subgroups of obese people according to their psychological functioning. The current study suggests that subgroups of overweight and/or obese individuals can be

established using several psychological and demographic variables despite the heterogeneity that exists within the population.

Cluster 1 was found to be more distressed on variables from the BSI and EDI-3 than cluster 2 and had higher BMI scores, an earlier age of onset, more distress related to their current weight, more distress experienced from childhood teasing, and more individuals meeting criteria for eating disorders. These findings are important because they support the relevancy of an assessment of the interactions of risk factors for the individual (Brownell & Wadden, 1992).

Likewise, the current results suggest that a more individualized approach to treatments may be warranted. Identifying the potential risk factors that an individual may be exposed to could lead to better and more effective interventions that are tailored to addressing those risk factors.

Given that the number of person's meeting criteria for overweight and/or obesity is increasing, it can be expected that more individuals will choose to seek support for their weight loss efforts in the future. The results of the current study suggest that there are differences among those seeking treatment for their weight and these differences include the extent to which an individual is distressed by their weight. In addition, the current results indicate that more attention needs to be paid to the eating patterns of individuals seeking treatment for their weight. It may be possible that a large number of individuals seeking treatment for their weight are meeting criteria for eating disorders including bulimia and binge eating disorder. A more thorough assessment of all of these factors could lead to more effective treatments and lower relapse rates among those who have lost weight.

What is not clear from this study is which factors are most important in distinguishing between overweight and/or obese individuals. Future studies will be needed to explore what factors are better at differentiating between these groups. With respect to psychological suffering, which factors put the individual at the greatest risk for suffering? In addition, identifying preventative factors for regaining weight following initial losses will be important given opportunities for relapse (Hutzler et al., 1981; Perri et al., 2001). Assessing the nature of the relationship between each risk factor and distress will be important. Finally, comparing overweight and/or obese individuals seeking treatment with overweight and/or obese individuals not seeking treatment with regard to subgroups and risk factors for psychological suffering would be helpful in establishing the differences, if any, between these groups of individuals.

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Figure 1: Centroid Distribution for BMI



Figure 2: Centroid Distribution for Distress Experienced from Current Weight

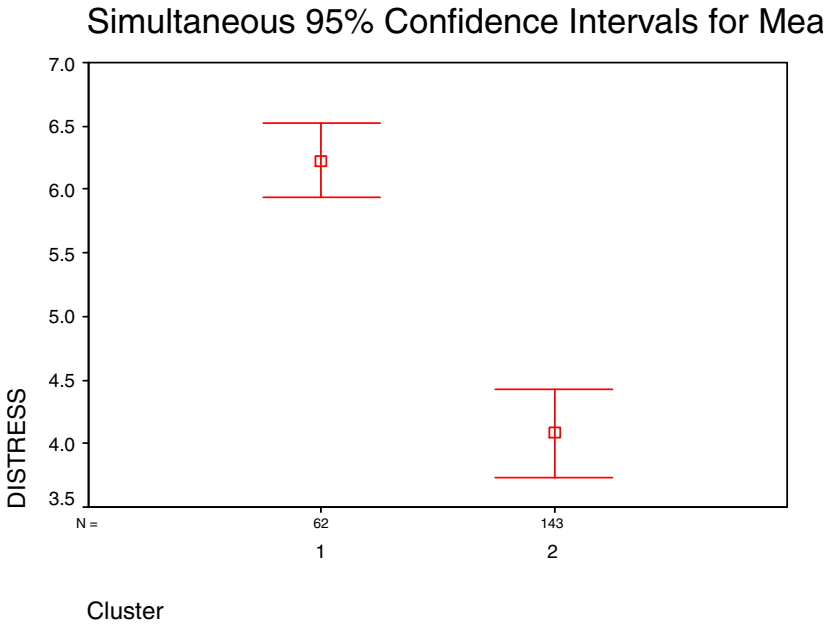

Figure 3: Centroid Distribution for Age of Onset

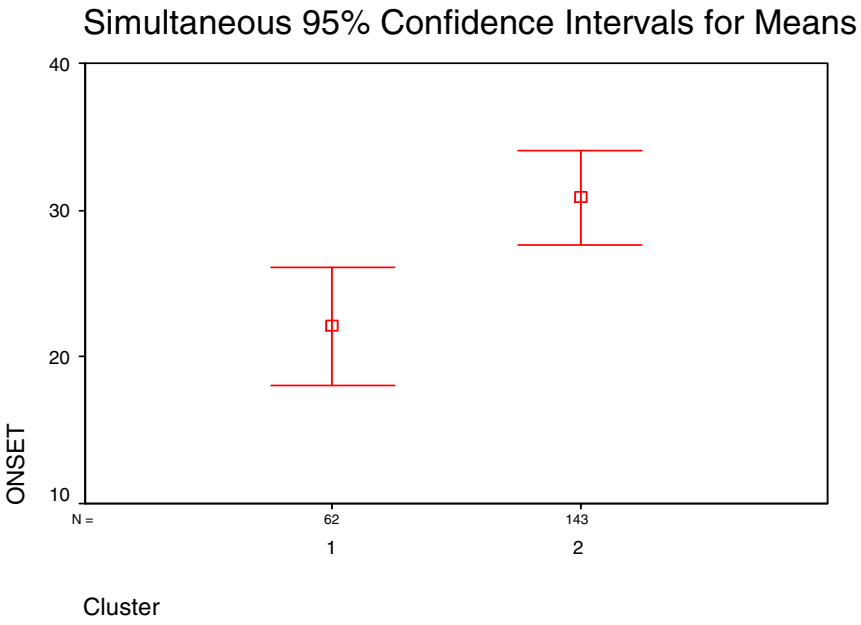

Figure 4: Centroid Distribution for Perceived Health

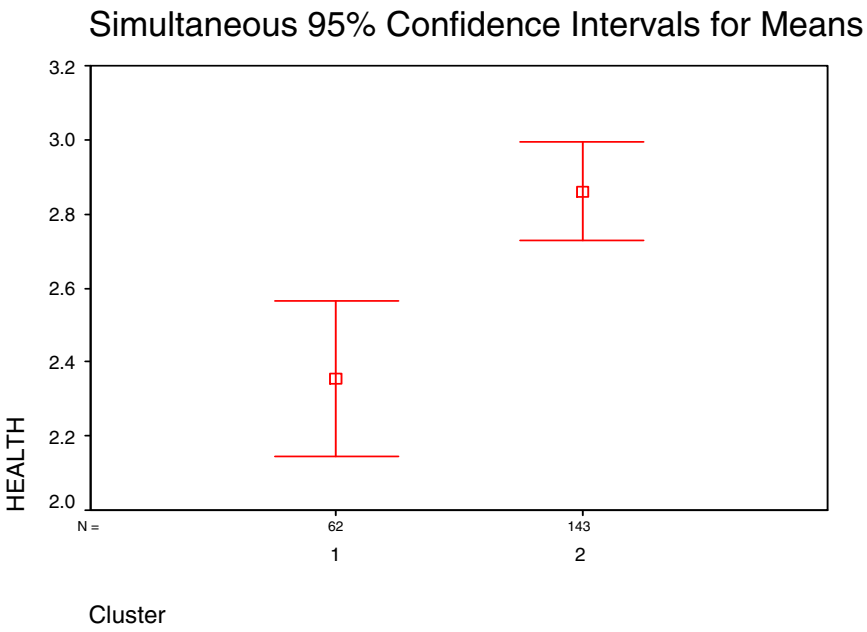

Figure 5: Centroid Distribution for Distress Experienced from Childhood Teasing

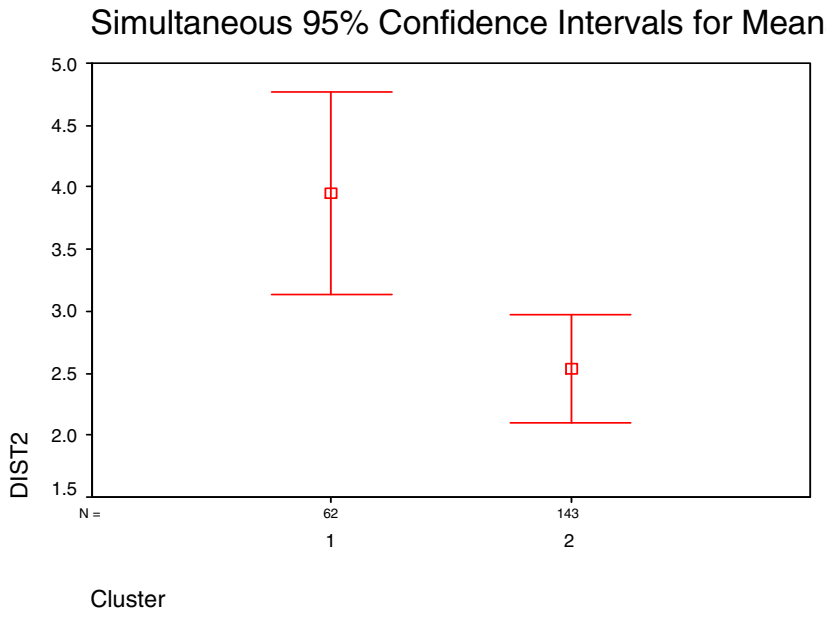

Figure 6: Centroid Distribution for Global Severity Index

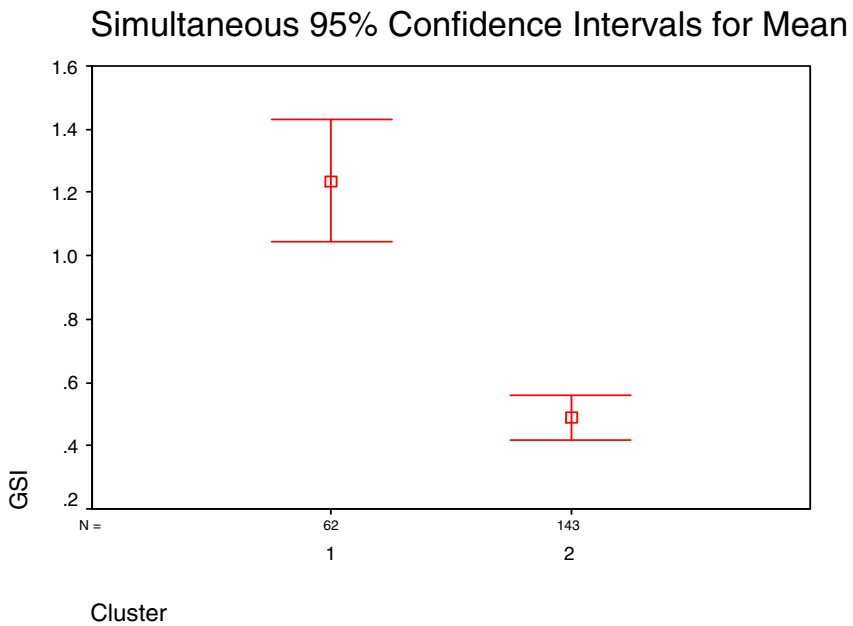

Figure 7: Centroid Distribution for Bulimia Subscale from EDI-III

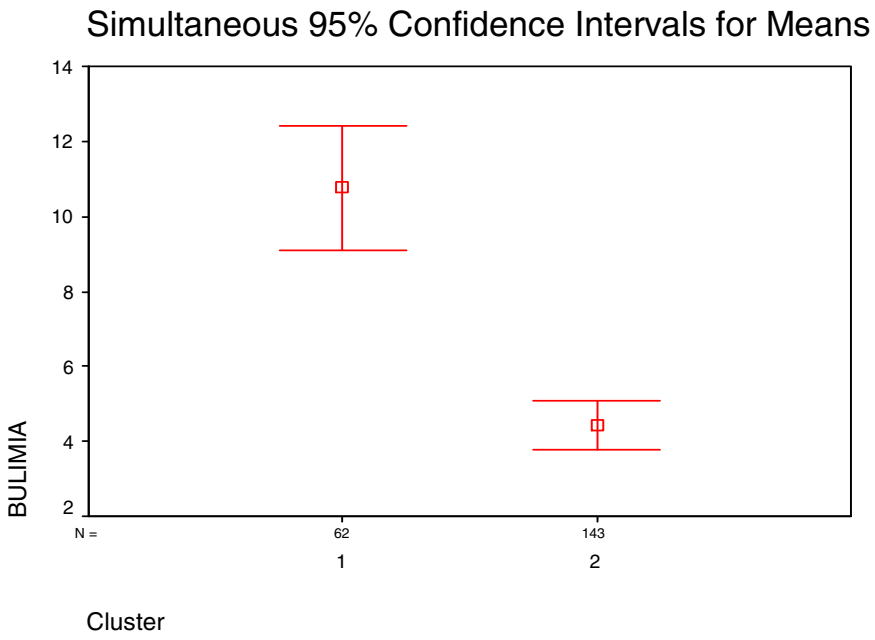

Figure 8: Centroid Distribution for Low Self-Esteem Subscale from EDI-III

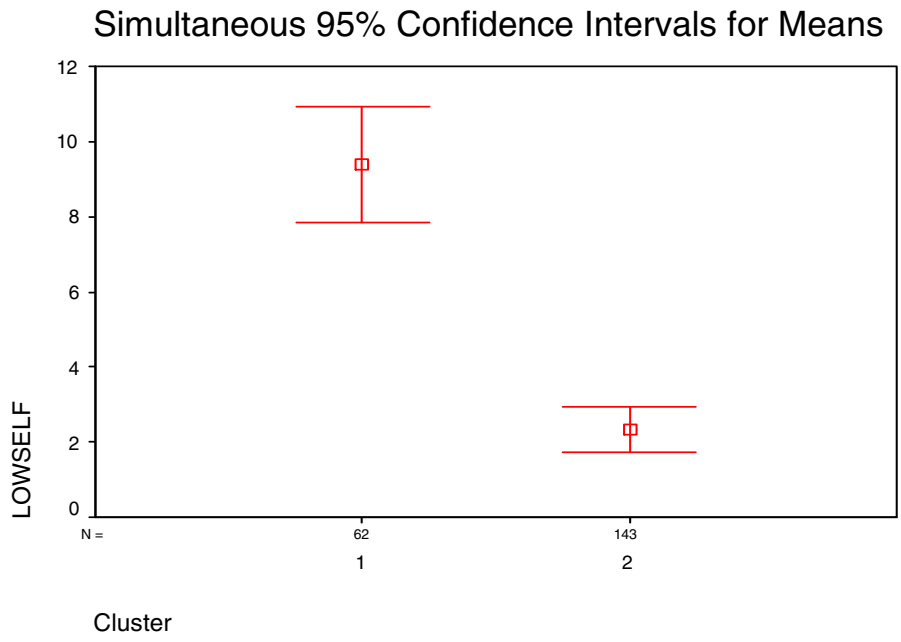

Figure 9: Centroid Distribution for Interpersonal Insecurity from EDI-III

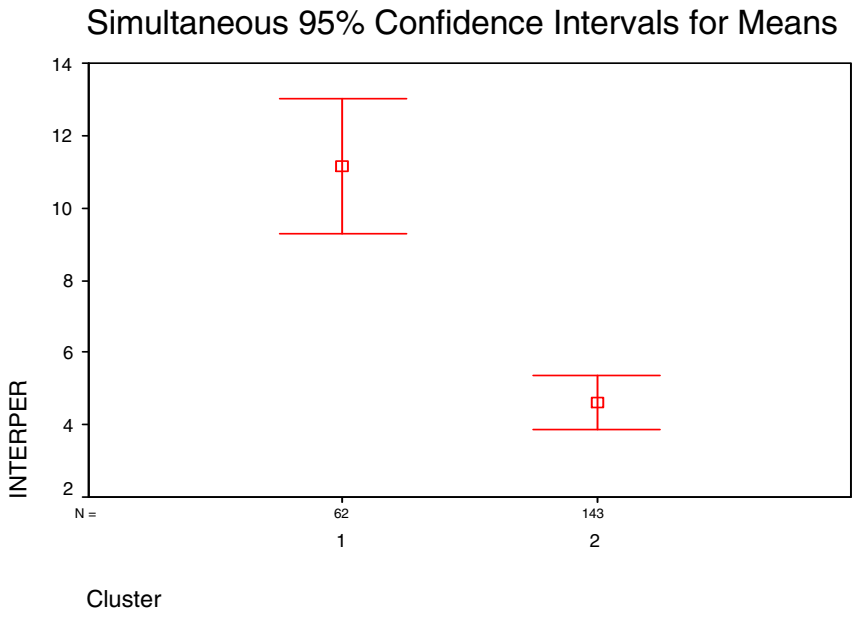

Table 1

Cluster Distribution

	Cluster 1	Cluster 2
N	62	143
Percentage	30.2%	69.8%

Table 2

Frequencies of Marital Status by Cluster

	Cluster 1		Cluster 2	
Marital Status	N	%	N	%
Married	42	68	102	71
Single	5	8	14	10
Divorced	13	21	13	9
Widowed	2	3	14	10
Total	62		143	

Table 3

Frequencies of Dieting History over the Last 12 Months by Cluster

	Cluster 1		Cluster 2	
Dieting History	*N*	%	*N*	%
Never	1	2	29	20
Once	8	13	10	7
Twice	2	3	11	8
Three or more	20	32	16	11
Continuous	31	50	77	54
Total	62		143	

Table 4

Frequencies of Eating Disorder Diagnoses by Cluster

	Cluster 1		Cluster 2	
Diagnostic Category	*N*	%	*N*	%
Bulimia	14	23	0	0
Subthreshold Bulimia	14	23	0	0
Binge-eating Disorder	5	8	1	<1
Symptomatic	18	29	87	61
Asymptomatic	11	18	55	38
Total	62		143	

Table 5

Means, Standard Deviations, and F Ratios for BMI, Distress Experienced from Current Weight, Age of Onset, Perceived Health, Distress Experienced from Childhood Teasing, GSI, Bulimia, Low Self-Esteem, and Interpersonal Insecurity

	Cluster 1		Cluster 2			
Variable	*M*	*SD*	*M*	*SD*	*F*	*p*
BMI	39.10	9.03	33.49	6.77	24.01	.000
Distress	6.23	1.00	4.08	1.83	75.17	.000
Onset	22.10	13.75	30.87	17.05	12.81	.000
Health	2.35	.73	2.86	.70	22.11	.000
Childhood Teasing	3.95	2.80	2.54	2.31	14.20	.000
GSI	1.24	.67	.49	.38	103.01	.000
Bulimia	10.76	5.64	4.45	3.46	95.98	.000
Low Self-Esteem	9.39	5.32	2.34	3.19	137.48	.000
Interpersonal Insecurity	11.16	6.38	4.61	3.99	79.60	.000

* Note: Higher scores on the variables GSI, Bulimia, Low Self-Esteem, and Interpersonal Insecurity represent higher levels of distress.

Table 6

Chi-Square Analysis Results for Marital Status, Dieting History, and Eating Disorder Diagnoses

Variable	Value	*df*	*p*
Marital Status	7.45	3	.059
Dieting History	27.69	4	.000
Eating Disorder Diagnoses	90.21	4	.000

Table 7

Means, Standard Deviations, and F Ratios for Age, How Many Pounds the Participant Feels He/She is Overweight, Depression, Anxiety, Somatization, and Positive Symptom Index

	Cluster 1		Cluster 2			
Variable	*M*	*SD*	*M*	*SD*	*F*	*p*
Age	52.87	11.31	62.43	12.03	28.30	.000
How Much	86.97	53.23	47.00	38.90	36.18	.000
Depression	1.47	.92	.42	.49	111.54	.000
Anxiety	1.13	.73	.43	.48	66.11	.000
Somatization	1.13	.81	.58	.65	26.37	.000
Positive Symptom Index	1.93	.62	1.39	.42	52.54	.000

APPENDIX A

PROSPECTUS

UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

AN EXPLORATORY STUDY OF POTENTIAL SUBGROUPS AMONG OVERWEIGHT AND OBESE INDIVIDUALS

Dissertation Prospectus

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirement for the

degree of

Doctor of Philosophy

By

John Linck
Norman, Oklahoma
June 2005
CHAPTER ONE

Introduction

Recently, it has been estimated that approximately one third to one half of the population of the United States is overweight (Oakes & Slotterback, 2001). Overweight and obesity are health concerns that have begun to affect people's lives at an earlier age and have contributed greatly to the rising costs of health care in the United States. It has been well-documented that people who are obese and/or overweight frequently suffer in many life domains, e.g., education, employment, healthcare, and social involvement (Miller, 1998). Obese persons have an increased risk of developing one or more co-morbidities (Wing & Klem, 1997); hypertension, coronary heart disease, stroke, gallbladder disease, osteoarthritis, type 2 diabetes mellitus, and several types of cancers pose life threatening risks to overweight individuals (Aronne, 2001).

The relationship between obesity and/or overweight and physical health risks has been well-documented (Black, Goldstein, Mason, Bell, & Blum, 1992; Friedman & Brownell, 1995; Roberts, Kaplan, Shema, & Strawbridge, 2000). However, much less is known about the psychological correlates of overweight and/or obesity. While it has been demonstrated that some overweight and obese persons at times experience depression (Ross, 1994), body image problems (Cash, Winstead, & Janda, 1986), and other psychological difficulties (Berman, Berman, Heymsfield, Fauci, & Ackerman, 1989), the nature of these relationships is not clear. Further, efforts to clearly delineate the relationship between excess weight and psychological distress have been met with limited success. Although it appears clear that some overweight and obese

persons suffer psychologically, it is not clear *how* or *if* they differ from the general population (Friedman & Brownell, 1995).

Background of the Problem

Based on the current literature, few if any systematic or meaningful psychological differences between normal weight and overweight/obese individuals are apparent. Friedman and Brownell (1995) reviewed the literature related to the psychological correlates of obesity and noted that research had not established a clear pattern of relationship between increased psychopathology and obesity among individuals in the general population. Findings such as these have led some researchers to conclude that obese persons are at no greater risk for psychological suffering than the general population.

In contrast to the findings from the general population, studies involving obese individuals seeking treatment have been more consistent in demonstrating a potential link between obesity and psychological suffering. Friedman and Brownell (1995) conducted a meta-analysis of studies assessing depression among those seeking treatment compared with a general population control group. Overall, these studies were more suggestive of the presence of elevated depression scores among those seeking treatment (Friedman & Brownell). Others have also found higher levels of psychological suffering among those seeking treatment. Ross (1994) examined data from a national telephone survey and concluded that overweight individuals who dieted had a higher risk for depression than those who were overweight and not dieting. Further, studies on surgical candidates for obesity have

indicated that the morbidly obese have a higher level of psychopathology than the general population (Hopkinson & Bland, 1982).

Clearly, the inconsistent findings reported in the literature could lead to the conclusion that there are no consistently identifiable psychological correlates of overweight and/or obesity. However, it has been speculated by some that methodological concerns in many studies have contributed to the inconsistent findings involving the hypothesized psychological correlates of overweight and/or obesity (Carpenter, Hasin, Allison, & Faith, 2000; Friedman & Brownell, 1995; Goldsmith et al., 1992). Following their review of the literature, Friedman and Brownell (1995) concluded that serious limitations in the conceptual and methodological bases of earlier studies required a revisitation of the conclusions advanced by authors of those earlier studies:

> Early studies sought to identify personality and psychopathology variables related to the etiology of obesity, not the effects of obesity on the individual. The results of these studies point to clear heterogeneity, both in etiology and in consequences of obesity. However, the inconsistency across studies was used as grounds to conclude that obesity does not increase the likelihood of psychological problems (p. 4).

Methodological concerns associated with past studies have included the treatment of overweight and obese populations as homogenous by grouping them together, the highly variable ways in which psychopathology constructs had been defined and measured in previous studies, examining a single treatment group without

comparing them to a control group that was not seeking treatment, and the use of widely varying samples.

Given the highly variable findings in the literature, some researchers have begun to examine why some overweight and obese individuals experience psychological distress related to their weight while others do not. One such hypothesis relates to factors that might increase the risk for psychological distress in some overweight and/or obese individuals. Friedman and Brownell (1995) called for studies that seek to identify risk factors for psychological distress among those who are overweight and obese as an effort to identify who might be suffering. Evidence in support of this hypothesis may be that changes in the prevalence rates of overweight/obesity are occurring across gender and age, indicating that there may be groups of people who are at increasingly greater risk for weight gain (Flegal & Troiano, 2000). It has been speculated that gender, the degree of obesity, dieting and dietary restraint, body image and cognitive differences, age of onset, teasing, and binge eating are all potential risk factors that may contribute to psychological suffering (Friedman & Brownell, 1995).

One such risk factor is gender, since women seek treatment for their weight more often than men do (Goldstein, Goldsmith, Anger & Leon, 1996). This fact does not necessarily indicate that women are at greater risk for developing psychological distress related to obesity, but might suggest that women are more likely than men to seek external support for weight-related issues. Results of some studies suggested that men and women may experience their weight differently (Carpenter et al., 2000; Crisp, Queenan, Sittampaln, & Harris, 1980; Herpetz et al., 2000). These differences

could be related to societal pressure for males to increase their body size as a sign of greater masculinity and might suggest that males are more likely to lose weight if they become depressed. A second factor could be the degree of overweight and/or obesity that an individual experiences (Friedman & Brownell, 1995). Aronne (2001) reported that persons with psychological disorders such as schizophrenia may have higher Body Mass Index (BMI) scores due to a variety of factors such as a lack of exercise and medication effects.

A third suspected factor in the risk for psychological distress among the overweight and/or obese is dieting and/or dietary restraint. Cogan and Ernsberger (1999) stated that dieting may have psychological consequences and cause a preoccupation with food. A related focus of research has been weight fluctuation, which is a common occurrence for many people who battle weight problems (Foreyt et al., 1995). Foreyt et al. (1995) found that non-fluctuators had a higher sense of well-being and higher self-efficacy related to self- control around food. Fluctuators reported more urges than non-fluctuators to overeat when experiencing negative emotions (Foreyt et al., 1995).

Fourth, body image concerns and cognitive differences from normal weight individuals may exist among the overweight and/or obese. Overweight women have been found to be more dissatisfied with their appearance than normal weight and underweight women (Cash & Green, 1986). Further, some evidence suggests that individuals still report body image concerns even after losing weight (Ramirez & Rosen, 2001). This suggests that there is some cognitive element to body image concerns that is not necessarily solved through weight loss.

A fifth factor may be the age at which one becomes overweight or obese. Adults who were obese as children may have lower body images than those with adult onset obesity (Stunkard & Wadden, 1992). This might be related to the stigma overweight and/or obese children experience and the ease with which messages can be internalized at younger ages. Sixth, the experience of being teased about one's weight may also represent a risk factor for psychological suffering. It is believed that teasing may be damaging to one's self-concept (Friedman & Brownell, 1995). Adults who were teased about their weight as children have been suspected to be at greater risk for body image disturbances (Cash et al., 1986). In addition, the frequency of being teased as a child has been shown to be related to obese females' future perceptions of their bodies (Grilo et al., 1994).

A seventh risk factor is binge eating. The prevalence of binge eating among those seeking treatment for obesity has been estimated to be around 30% (Spitzer et al., 1992). Clearly, with the high prevalence rates of binge eating in the treatment population, better assessment is needed to identify those who binge eat. Further, research focusing on binge eating has suggested that higher levels of mental distress exist among those who binge eat (Kaplan & Ciliska, 1999). Lower levels of self-esteem and greater dysphoria have also been associated with binge eaters (Striegel-Moore, Wilson, Wilfley, Elder & Brownell, 1998).

When the potential risk factors for overweight and obesity are identified together, it becomes clear that there may be substantial overlap across risk factors. Thus, a single approach to treating overweight and obesity appears to be insufficient, and greater attention is needed to the differential assessment of those who might be

suffering psychologically (Brownell & Wadden, 1992). Identification and explication of potential risk factors may prove valuable in efforts to explain the high relapse rates following the cessation of treatment for overweight and/or obesity (Perri et al., 2001).

Statement of the Problem

While it is clear that some obese persons suffer psychologically; it is not clear *why* or *how* they are suffering. Friedman and Brownell (1995) concluded that heterogeneity within the overweight and obese populations was a contributing factor to findings that have revealed few psychological differences between overweight and normal weight individuals. Further, Fitzgibbon and Kirschenbaum (1990) indicated that it may be possible to establish subgroups of obese people according to their psychological functioning. A better understanding of risk factors might illuminate the relationship between overweight/obesity and psychological suffering. Factors such as gender, the degree of obesity, dieting and dietary restraint, body image and cognitions, age of onset, teasing, and binge eating might all play a role in the experience of psychological distress. If risk factors that contribute to psychological distress among the overweight and obese can be better understood, their specific roles in the weight-related difficulties of individuals can be assessed and targeted in treatment (Friedman & Brownell, 1995; Brownell & Wadden, 1992).

Currently, much of the research in the area of overweight and obesity is focused on how to treat weight related issues. Often, treatments are one-size-fits-all approaches that ignore the individual needs of each person. In addition, research on the long term effects of treatments suggest that there is a fairly high relapse rate and that not all individuals lose weight as a result of treatment. Therefore, treatments that

take into account the potential risk factors for psychological suffering might better serve individuals who seek treatment for overweight and/or obesity.

The purpose of the current study is to explore whether or not select psychological and demographic dimensions can be used to identify meaningful subgroups among a sample of overweight and obese individuals seeking treatment for weight loss. It is hoped that this study may contribute to our understanding of potential factors that might differentiate among overweight and/or obese individuals who are seeking treatment for their weight. The specific question to be addressed in this study is:

> Can meaningful subgroups of overweight and obese persons be identified based on their scores on a select group of psychological and demographic dimensions? Specifically, these dimensions will include three scales of the Eating Disorder Inventory-3 (EDI-3), the nine scales of the Brief Symptom Inventory (BSI), the Questionnaire of Eating Disorders Diagnoses (Q-EDD), and the two scales of the Appearance Schemas Inventory-Revised (ASI-R)?

Significance of the Study

Clearly, overweight and obesity are complex, multidimensional issues. There are no indications that the prevalence of obesity is decreasing or even remaining constant. In fact, studies are showing that the number of persons who are fitting the overweight categories is increasing. This is leading many people to seek treatment for their weight at this time, however, treatments for obesity have been shown to be effective in facilitating weight loss in the short term but fall short with regard to participants' ability to maintain lost weight (Hutzler, Keen, Molinari, & Carey, 1981;

Peri et al., 2001). This research could contribute to our ability to identify risk factors that may contribute to weight regain after treatment. In addition, many people experience psychological distress as a result of their weight status and the current understanding of who might be at risk to experience weight related distress is poorly understood. Clearly, research that helps to distinguish those who are at risk for suffering from those who are at less of a risk is important (Friedman & Brownell, 1995). This study is hypothesized to assist in determining who might be at risk for psychological distress among those seeking treatment for their weight. If factors that appear to increase the risk for psychological distress among the overweight and/or obese are found, then treatments can be tailored to include interventions that relate to these factors. In general, this research could help providers determine who might benefit from treatment, how to better tailor treatments to the individual, and who might be at risk for relapse after treatment is discontinued.

CHAPTER TWO

Introduction

Kuczmarski (1992) reported that approximately 24% of men and 27% of women were overweight, with 8% of men and 11% of women meeting the criteria for obesity. More recently, it has been estimated that approximately one third to one half of the population of the United States is overweight (Oakes & Slotterback, 2001). Some evidence suggests that these rates may be even higher among individuals with severe or chronic mental health problems (Daumit, Clark, Graham, Lehman, & Ford, 2003). These alarming statistics have led to obesity becoming a major health priority in the United States over the last twenty years (Cogan & Ernsberger, 1999).

There is speculation that this major health problem is due in part to societal changes (e.g., the increasing number of dual earner families, single parent families, etc.) that have increased the demands on our time. To aid in dealing with these demands, increases in technology have served to make life more convenient for individuals who already have little free time. One such change has been increased access to convenient foods. Often these foods take little or no time to prepare, are cheaper, have a higher fat content, and are higher in calories. For many people, this change in diethas likely contributed to weight gain, which can lead to becoming overweight and/or obese.

Overweight and obesity typically occur when caloric intake exceeds output of energy. This difference between intake and output is a significant contributor to the rising prevalence rates of overweight and obesity. Overeating, or taking in more calories than one needs to maintain their current weight, is a term used to help

describe the imbalance between caloric intake and energy output. As societies advance, less energy is expended in the work place or during free time. This may result in reduced energy output and eventually to the rising prevalence rates of overweight and obesity.

It has been well-documented that people who are obese and/or overweight frequently suffer in many life domains, e.g., education, employment, healthcare, and social involvement (Miller, 1998). Overweight and obesity are health concerns that have begun to affect people's lives at an earlier age and have contributed greatly to the rising costs of health care in the United States. The increased occurrence of a variety of co- morbid physical disorders such as hypertension, coronary heart disease, stroke, gallbladder disease, osteoarthritis, type 2 diabetes mellitus, and several types of cancers pose life threatening risks to overweight individuals (Aronne, 2001). Many factors have been found to play a role in obesity, including a broad range of genetic and environmental factors (Hodge and Zimmet, 1994 as cited in Wing & Klem, 1997).

While physical correlates of obesity have been widely studied and identified, much less is known about the psychological correlates of overweight and/or obesity. Clearly, some individuals experience distress related to their weight. Furthermore, there is a not-so-subtle assumption in our culture that individuals should be able to control their behavior, implying that the failure to control one's weight represents a personal failure of sorts (Goodrick, 1999). However, efforts to clearly delineate the relationship between excess weight and psychological distress have been met with

limited success. Empirical research has also been unable to determine who is likely to benefit from treatment.

Prevalence and Health Concerns

Obese persons have an increased risk of developing one or more co-morbidities (Wing & Klem, 1997). Co-morbid disorders such as hypertension, colon cancer, osteoarthritis, and type 2 diabetes mellitus have been deemed more likely to occur as a person's Body Mass Index (BMI) increases (Aronne, 2001). BMI is a person's weight in kilograms divided by the person's height in meters squared (kg/m^2). Mokdad et al. (2000) conducted a longitudinal study in 43 states over an eight-year period to assess the prevalence of diabetes. These authors found that the number of persons informed by a doctor that they had diabetes increased by almost 33% in the 43 states and by as much as 9% in one state alone during this time. Among individuals aged 30-39 years, there was an increase in prevalence of 76% (Mokdad et al.). The authors also noted that self-reported weight gain was related to an increase in diabetes in their study. In an effort to examine several factors that impact the health of women in particular, Mack and Ahluwalia (2003) studied data from the 1991-2001 Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is a telephone-based national survey that is used to assess health related behaviors of adults. These authors reported that there was a 9% increase in the prevalence of obesity among women in that 10-year period. Over that same time, the number of women who reported having high blood pressure increased as well, mainly in women over the age of 50. Again, the implication of these findings is that obesity increases the risk for health problems.

Some evidence suggests there is a relationship between overweight and obesity and socioeconomic status (SES). Persons of lower SES often display higher rates of overweight and obesity. Hallstrom and Noppa (1981) reported that non-obese women in their sample were in a higher social class than the obese women. Stunkard, Faith and Allison (2003) noted in a summary of the relationship between obesity and depression that:

> Among women, obesity is related to major depression, and this relationship increases among those of high SES, while among men, there is an inverse relationship between depression and obesity, and there is no relationship with SES (p. 330).

One reason for this difference could be that, for women, appearances are more closely associated with their economic status than for men. Kuzmarski (1992) reported on prevalence rates from a national study on the health and nutrition of Americans. He reported higher prevalence rates of overweight among those who were below the poverty level. However, the vast majority of overweight Caucasian males were above the poverty level.

Prevalence rates for overweight and obesity have been rising for several different ethnic groups. In a study looking at the changes in prevalence rates between 1976-1980 and 1988-1994, significantly fewer Caucasian women had BMI scores between 30-34.9 (Obese) than African-American women and Mexican-American women (Flegal, Carroll, Kuczmarski, & Johnson, 1998). It is unclear why this trend is occurring, but changes in smoking status, differences in SES, a lack of physical exercise, and unidentified genetic links could be some of the reasons for these

differences. Interestingly, smoking, which is associated with other health concerns, has been shown to be a preventative factor against obesity (Zablotsky & Mack, 2004). In regard to the impact of physical activity, persons who do not exercise and who are in poor health tend to be at a greater risk for developing obesity (Zablotsky & Mack, 2004). Clearly, less exercise contributes to less energy expenditure, and individuals in poor health may be unable to engage in the types of physical activity that promote weight loss or weight maintenance.

In addition to the differences in weight based on SES, gender, and ethnicity, there also may be differences among demographic groups with respect to the occurrence of binge eating. Binge eating has been implicated as being prevalent among the obese, especially among those seeking treatment (Spitzer et al., 1992). However, while overweight Caucasian males were found to engage in binge eating more than their normal weight counterparts, no such pattern was found among African-American men (Smith, Marcus, Lewis, Fitzgibbon & Schreiner, 1998). Further study of the relationships among these variables is needed to extend our current understanding.

Clearly, overweight and obesity are complex, multidimensional issues. There are no indications that the prevalence of obesity is decreasing or even remaining constant. In fact, studies are showing that the number of persons who are fitting the overweight categories is increasing. It is clear that being overweight and/or obese carry significant health risks that appear to increase with the degree of overweight and/or obesity. The likelihood of becoming overweight and/or obese also appears to be related to factors such as gender and ethnicity. Persons with lower SES may be

more likely to be overweight. This may be due to financial constraints that encourage diets that are higher in fat, limited access to resources aimed at health and exercise, or to other factors. However, these hypotheses have not been sufficiently explored in the literature. While it remains uncertain as to why these differences exist, it is clear that more people each year are meeting the criteria for overweight and obesity, and related health problems such as diabetes and high blood pressure also continue to rise.

Consequences of Overweight and Obesity

In addition to the health problems associated with weight, individuals who are overweight or obese may also suffer a broad range of social consequences as a result of their weight status. While social taboos tend to discourage gender stereotyping, racism, and many other prejudices that exist in our culture, judgmental attitudes toward those who are overweight/obese seem somewhat more acceptable (Wadden, Womble, Stunkard, & Anderson, 2002). Overweight and obesity appear to be topics that many find difficult to discuss openly. It is one of those differences between people that is not perceived in the same light as race, gender, or ethnicity.

A common perception is that weight can and ought to be controlled. Thus, those who are unable to maintain normal weight are often believed to lack self-control or to choose not to exercise self-control (Goodrick, 1999). Overweight and obese persons are also more likely to face challenges such as basic physical accommodations (e.g., comfortable seating, airplane seatbelts that fit, etc.) in routine daily life that normal individuals do not have to face (Stunkard & Wadden, 1992). Studies have documented society's negative perceptions of obese individuals. Typically obese persons are rated as less likable and/or lazier than normal weight

individuals (Brownell & O'Neil, 1993). Miller, Rothblum, Felicio, and Brand (1995) conducted two studies to examine the impact of size on ratings of social attributes; however, only the first study, which relates directly to this discussion, will be described here. This study involved obese and non-obese women having phone conversations with persons recruited to rate their attractiveness, sociability and likeability. The persons who rated the women were recruited from a newspaper advertisement and were told that they would be participating in a study involving first impressions. One-half of the telephone raters were able to see the women they spoke to on a video monitor while the other half were not able to see the woman to whom they were talking. The telephone raters who were able to see their conversation partners via video monitor watched their partners sitting quietly for ten minutes before the conversation and subsequently rated their expectations regarding their partners on the dimensions of likeability, sociability and attractiveness. The raters who could not see the women via video monitor also made ratings before the conversation based on what they expected their partner to be like. Subsequently, a five-minute conversation was conducted by phone, after which each telephone rater rated the woman he/she had spoken to on the same three dimensions. The obese women observed on the video monitor were rated as less attractive than both the non-obese women observed on the video monitor and the obese women who were not observed on the video monitor. Obese women who were seen by the raters on the video monitor were rated as less attractive before the conversation than obese women who were not seen on the video monitor. The authors concluded that ratings of attractiveness were likely influenced by the raters' perceptions of women's weight

(Miller et al., 1995). Such perceptions inevitably permeate both social and occupational arenas. The challenges and stigmatization that accompany overweight and obesity likely contribute to the personal and social distress these individuals experience (Cogan & Ernsberger, 1999).

Terms and Definitions

Overweight and obesity refer to the ratio of height to weight in an individual. However, complete assessment of individuals presenting with weight problems should also involve investigating the psychological and/or specific eating difficulties of these individuals. It will be helpful to define and describe more fully some of the terms to be used in this paper before discussing the psychological variables involved in being overweight and/or obese.

Persons having an unusually large percentage of adipose tissue have generally fallen into the obese categorization (Friedman & Brownell, 1995). Overweight has been described has having excess body weight (Foreyt, Goodrick, & Gotto, 1981; National Institutes of Health [NIH], 1998). However, this does not mean that one has an excess of body fat. *Body Mass Index* (BMI) is a term that has been used to help determine weight status. BMI is a person's weight in kilograms divided by the person's height in meters squared (kg/m^2). Terms such as *overweight* and *obesity* are quite often used interchangeably in the literature (Kuzmarski, 1992); however, for the purposes of this paper, each of these terms will have a specific and distinct meaning. The term overweight will be used to reflect BMI scores ranging from 25-29.9 kg/m^2, while obesity will be defined as a BMI score greater than or equal to 30 kg/m^2 (NIH, 1998). Although this measure will be used in the current study, other researchers in

the field have used slightly altered cutoff points for overweight and obesity, such as percentiles that compare individuals to other persons in their age and gender groups. This is done by comparing individuals to others in a distribution based on BMI scores of individuals from the 20-29 year age group and is another way researchers have set the criteria for overweight and obesity (Kuczmarski, 1992). Kuczmarski (1992) noted that the 20-29 year age group is used because no further increases in height are expected after this time. However, the cutoff points set by the NIH are those at which risks for health-related concerns begin (NIH, 1998). Another term that is used in the literature quite often is *morbid obesity*. This term will reflect BMI scores ranging from 40-50 kg/m^2 (MacLean, Rhode, & Forse, 1990).

The BMI is relatively easy to calculate and inexpensive when compared to other methods that have been used to calculate percent body fat. BMI is not a perfect measurement, and it is possible for some people such as athletes to fall in the overweight category without incurring specific health risks. Part of the problem with the measure of BMI is that it does not measure body fat. Although someone with excess body weight may have a higher percentage of body fat, this is not always the case.

Binge eating is used to describe persons who have periods of uncontrolled eating in which they may consume unusually large amounts of food (Garner, 2004). A *binger* is someone who engages in periods of binge eating, but who does not purge afterwards. A *diagnosable eating disorder* among the overweight and obese is defined as follows (a) regular episodes of eating abnormal amounts offood in short periods of time during which the individual feels a loss of control, (b) regular efforts

to prevent weight gain such as dieting or excessively exercising that do not involve the act of purging, (c) the behavior occurs at least two times per week for three months, (d) the person's body shape and current weight have a significant impact on how the person views himself/herself, and (e) this does not occur as part of an Anorexia Nervosa episode (Diagnostic and Statistical Manual for Mental Disorders Fourth Edition Text Revision [DSM-IV-TR], 2000). *Non-bingers*are those people who do not engage in binge eating, but for the purposes of this study are described as either overweight or obese.

A *lifetime prevalence rate* summarizes which individuals in a study have belonged in a particular group (e.g., persons meeting the criteria for overweight or obesity, persons meeting the criteria for depression, etc.) at some point in their lifetimes. Prevalence rates can also be described for those individuals belonging in a particular group at that moment in time.

Psychological suffering (Friedman & Brownell, 1995) or what might also be termed *psychological distress* is used to describe the condition of an individual who reports dissatisfaction with his or her psychological self. For example, psychological suffering might be reflected through experiences of depression, anxiety, personality disturbance, body image distortions and body dissatisfaction, as well as many other possible indicators. *Treatment* in the context of obesity will be defined as seeking support for weight loss. Treatment may include psychoeducational training in conjunction with weight loss, surgery, counseling and psychotherapy, and participation in plans marketed by companies who specialize in weight loss programs, and so forth.

Psychological Correlates

The relationship between obesity and/or overweight and health risks has been well-documented (Black et al., 1992; Friedman & Brownell, 1995; Roberts et al., 2000). Interestingly, though, little research has been published on the potential consequences of obesity on psychological well-being. The DSM-IV-TR no longer considers overweight and obesity to be psychological disorders in and of themselves. Overweight and obesity can only be diagnosed if there is a clear psychological impact for an individual (DSM-IV-TR, 2000). This implies that obesity is not inherently linked to psychological mechanisms. Likewise, the most common treatments for overweight and obesity, which include weight loss programs, diet changes, pharmacotherapy, and surgery, also suggest a strong physical and/or biological link. Treatment programs often encourage exercise and a change in eating habits, but rarely focus on the psychological aspects of being overweight or obese (Ramirez & Rosen, 2001). Perhaps this is inevitable, even necessary, in light of our limited understanding of the psychological factors associated with overweight and obesity.

Many studies have been designed to examine the psychological correlates of obesity and/or overweight. Friedman and Brownell (1995) reviewed the literature related to the psychological correlates of obesity and noted that research had not established a clear pattern of relationship between increased psychopathology and obesity among individuals in the general population. Depression and anxiety have been the two primary variables examined in studies of this nature (Friedman & Brownell, 1995; Stunkard, Faith & Allison, 2003). From their meta-analytic study, Friedman and Brownell (1995) concluded that obesity failed to relate to either

depression or anxiety. However, the authors noted that the pattern of relationship between obesity and depression varied across studies while the pattern of relationship between obesity and anxiety was fairly consistent. These authors conducted a meta-analysis of studies assessing depression among those seeking treatment for obesity compared with a general population control group. Overall, these studies were more suggestive of the presence of elevated depression scores among those seeking treatment (Friedman & Brownell). However, these authors concluded that serious limitations in the conceptual and methodological bases of earlier studies required a revisitation of the conclusions advanced by authors of those earlier studies:

> Early studies sought to identify personality and psychopathology variables related to the etiology of obesity, not the effects of obesity on the individual. The results of these studies point to clear heterogeneity, both in etiology and in consequences of obesity. However, the inconsistency across studies was used as grounds to conclude that obesity does not increase the likelihood of psychological problems
>
> (p. 4).

The many methodological concerns surrounding studies in this area leave many unanswered questions regarding the impact of obesity on psychological well-being (Friedman & Brownell, 1995). Several specific methodological concerns have been noted in the literature as contributing to the inconsistent findings between the hypothesized psychological correlates of overweight and/or obesity (Carpenter et al., 2000; Friedman & Brownell; Goldsmith et al., 1992).

The first methodological concern stems from the comparison of obese individuals and normal weight individuals, which is based on the assumption that the overweight and obese populations constitute a homogeneous group (Friedman & Brownell, 1995; Stunkard & Wadden, 1992). This premise suggests that overweight and obese individuals are expected to have the same potential for psychological distress regardless of their weight status. However, individuals may meet criteria for overweight, obesity, or morbid obesity, and these may have differing consequences for different individuals (Kuzmarski, 1992). Therefore, the finding of no differences between obese and normal weight individuals might be due to the failure to consider potential differences within the overweight/obese populations (Friedman and Brownell). Examples of potentially relevant sources of variability within these groups include the degree of obesity, age of onset, and binge eating status.

A second methodological concern relates to the highly variable ways in which psychopathology constructs were defined and measured in earlier studies (Friedman & Brownell, 1995). Only depression and anxiety were assessed with any consistency across studies, making them the only constructs amenable to use in meta-analysis. A third concern is that many studies examined only a single group of individuals seeking treatment versus comparing them to a control group that was not seeking treatment. Studies in which control groups have been used have included individuals from the general population or from medical settings where the characteristics of these populations were poorly understood (Friedman & Brownell). This has frequently presented challenges in interpreting the findings of these studies.

A fourth methodological concern has been the use of widely varying samples. Many studies have used samples of morbidly obese individuals who were presenting for surgical treatment. Studies of persons presenting for treatment in other medical type settings may introduce factors such as subjective health ratings that might impact results and limit the applicability of the findings. Other studies have used only individuals from the general population or individuals seeking treatment for their weight. Collapsing different weight status groups together, as well as not using matched controls, may originate from the naïve assumption that this population is homogeneous.

In addition to the above noted concerns regarding methodology, at least one author has noted that there appears to be a lack of *prospective* studies that could be used to establish a link between overweight and/or obesity and psychological distress (Roberts et al., 2000). Prospective studies are those that follow a large group of individuals over a long period of time (Cogan & Ernsberger, 1999). Such studies may provide very helpful information regarding the onset of obesity, psychiatric history, changes in health, and changes in weight over time. Further, being able to monitor the relationship between weight change and psychological variables over time may prove very enlightening. What is clear is that some obese persons suffer psychologically; it is not clear *why* or *how* they are suffering. The lack of prospective studies can be viewed generally as yet another methodological deficit.

Studies Within the General Population. In order to fully assess the psychological variables that may relate to excess weight, it will be helpful to review some of the studies from the general population. Based on the current literature, few

if any systematic or meaningful psychological differences between normal weight and overweight/obese individuals are apparent. Although it appears clear that some obese persons suffer psychologically, it is not clear *how* or *if* they differ from the general population (Friedman & Brownell, 1995). In fact, some researchers have concluded that obese persons are at no greater risk for psychological suffering than the general population. Stunkard and Wadden (1992) indicated that there were few differences psychologically between obese surgery candidates and normal weight individuals. However, the authors also noted that post-surgery patients experienced increased psychosocial functioning and improvements in their sexual relations with their marital partners. This latter finding may suggest that although there were no significant differences between these groups of people, there were psychological gains made in the course of treatment. Palinkas, Wingard, and Barrett-Conner (1996) examined data from 2,245 men and women. Among women there appeared to be no overall relationship between depression, anxiety and obesity. However, men with higher BMI scores reported fewer symptoms of depression than men with lower BMI scores. This inverse relationship between BMI and depression that has been found within the male population has been called the "Jolly Fat" hypothesis (Crisp & McGuinness, 1976). Similar conclusions have been reached in other studies involving overweight and/or obese males (Crisp, Queenan, Sittampaln, & Harris, 1980).

Since depression can induce changes in appetite, researchers have been interested in why some people gain weight and others lose weight when they become depressed. In a follow-up study of 288 men and women to identify whether baseline

scores of depression and cynical hostility predicted weight gain, Haukkala, Uutela, and Salomaa (2001) found that initial baseline depression scores predicted both weight loss and weight gain. These findings indicate that the direction of weight change associated with depression may be hard to determine. As discussed earlier, Friedman and Brownell (1995) found both depression and anxiety to be unrelated to obesity.

Studies using Treatment Groups. Studies involving obese individuals seeking treatment have been more consistent than studies conducted in the general population in demonstrating a potential link between obesity and psychological suffering. One explanation might be that a higher percentage of persons experiencing psychological distress are likely to be found among those seeking treatment for their weight than among persons not seeking treatment. Among individuals seeking treatment for weight, the variable that has shown the strongest potential link to obesity has been depression. The precise nature of this relationship remains unclear as yet. As mentioned previously, weight may fluctuate in either direction among depressed individuals, complicating efforts to understand the relationship (Haukkala et al., 2001). Even among studies of overweight and obese persons in treatment, there is considerable variability among the findings (Friedman & Brownell, 1995). Friedman and Brownell concluded that depression was higher in individuals seeking treatment than in those comprising the control groups. Ross (1994) examined data from a national telephone survey and found that being overweight was linked to depression only among well-educated females. She concluded that overweight individuals who dieted had a higher risk for depression than those who were overweight and not

dieting. This appears to point to dieting as a potential risk factor for psychological distress. Fitzgibbon, Stolley, and Kirschenbaum (1993) compared an obese treatment group with an obese non-treatment group and a group of normal weight individuals. Their results suggested that those in the obese treatment group exhibited more symptoms of borderline personality disorder, reported more experiences of binge eating, and had higher scores on the Symptom Distress Checklist (SCS-90) than the other two groups. These findings again suggest that there maybe some differences between those who seek treatment and those who do not seek treatment.

Studies on surgical candidates for obesity have indicated that the morbidly obese have a higher level of psychopathology than the general population (Hopkinson & Bland, 1982). Among a sample of 54 patients presenting for obesity treatment, there was a 55.6% lifetime prevalence of Axis I mood disorders (Goldsmith et al., 1992). These patients had decreased psychosocial functioning, and the mood disorder rate in this sample was five time higher than for the general population. Berman et al. (1989) found a lifetime prevalence for Axis II disorders to be 55% in a sample of morbidly obese individuals. Axis I and Axis II disorders are part of the five axial system of the DSM-IV-TR. The Axis I disorders reported in the above study are mood disorders, and personality disorders compromise the Axis II disorders (DSM-IV-TR, 2000). Berman et al. suggested that obese patients may seek medical treatment over psychiatric treatment for their obesity and that a link may exist between those seeking medical treatment and those suffering psychologically. These authors also suggested that the co-morbidities associated with obesity may put those in medical populations at risk for psychological distress. Goldstein et al. (1996)

examined 66 people who were beginning treatment with a commercial weight loss center called Nutrisystem. The persons seeking treatment were found to be more depressed and more dissatisfied with their bodies than an outpatient comparison group consisting of individuals presenting for general medical treatment. In addition, 25.8% of their sample had BMI scores in the average weight category, yet exhibited high levels of body dissatisfaction. Again, these findings support the notion that psychological differences may exist between those seeking treatment and those who are not.

Hypotheses Regarding Risk Factors for Suffering. As already noted, the links between psychological suffering and overweight and obesity still remain unclear at this time. Studies conducted in the general population reveal few if any differences between normal weight and overweight and/or obese individuals. It has been suggested that the general failure to detect differences may be attributable to conceptual and methodological shortcomings in the early studies in this area. However, high levels of psychological distress have been observed in individuals seeking treatment for their weight. Several have speculated as to what factors might lead to psychological distress in overweight and/or obese individuals.

One hypothesis was identified by Ross (1994) who examined 2,020 individuals as part of a national telephone survey. Ross (1994) found evidence to support the idea that obese individuals attempt to fit a normative appearance by dieting and become depressed. This finding suggests that just being overweight/obese does not necessarily mean that one will become depressed, but instead that trying to fit a normative appearance may be distressing. Dieting may cause unusual distress as

the person attempts to fit in with those around him or her. This finding supports others who have suggested that dieting or restrained eating can have negative consequences for some individuals (Cogan & Ernsberger, 1999; Tiggemann, 2000). However, it is important to mention that those who are morbidly obese or have other heath complications may need to lose weight in order to improve or maintain their current levels of health. Clearly, not all instances of dieting or weight loss are harmful.

Yet another hypothesis regarding potential differences between overweight, obese, and normal weight individuals relates to how people respond to food cues in their environments. The influx of food cues that individuals are exposed to daily may be related to the increase in obesity (Oakes & Slotterback, 2001). Some researchers have hypothesized that overweight and obese persons respond more strongly to external non-food-related cues that lead to their consuming more food than normal weight individuals. Etou et al. (1989) examined 13 obese females and 13 normal weight females to assess psychomotor function and time judgments. Participants in this study were assigned tasks of tapping, manual dexterity, speed of pressing one key on a board and then another, and reproduction of tones of differing lengths. This study revealed that obese individuals were less responsive to internally cued stimuli and were more responsive to externally cued psychomotor tasks. Similarly, a study by Gardner, Reyes, Brake, and Salaz (1984) had participants reproduce brief tones of differing lengths and distinguish between the lengths of tones presented to them. These authors found that obese individuals responded more slowly to internal cues in which they had to rely on internal processes to reproduce a brief tone accurately. The

results of these studies suggest that obese individuals respond more strongly to external versus their own internal cues. Therefore, environments that are rich in external food-related cues may cause these individuals to eat when they have no internally cued appetite.

Other studies have focused on food-related cues and how those impact appetite. Oakes and Slotterback (2001) found that verbal food cues increased the appetites of self-reported non-dieters; however, dieters reported decreases in appetite. In a representative sample of undergraduates, those exposed to food-related cues reported increased appetites and a greater desire to eat versus a control group not exposed to the food-related cues (Oakes & Slotterback, 2000). These findings, which contradict those regarding non-food-related cues, may suggest that viewing obesity in terms of external and internal cues may not be sufficient enough to explain differences between normal weight and overweight and/or obese individuals. Thus, this hypothesis has received less support in recent years (Chelune, Ortega, Linton, & Boustany, 1986).

A final hypothesis relates to factors that might increase the risk for psychological distress in some overweight and/or obese individuals. Fitzgibbon and Kirschenbaum (1990) indicated that it may be possible to establish subgroups of obese people according to their psychological functioning. In order to identify who might be suffering, Friedman and Brownell (1995) suggested studies that seek to identify risk factors for psychological distress among those who are overweight and obese. Earlier comparisons between overweight and/obese individuals and normal weight individuals typically treated the overweight and/or obese populations as

homogeneous. Friedman and Brownell concluded that heterogeneity within the overweight and obese populations was a contributing factor to findings that have revealed few psychological differences between overweight and normal weight individuals. Further, these authors suggested a shift in focus toward identifying which factors might lead to psychological distress in overweight and obese individuals.

Clearly, research that helps to distinguish those who are at risk for suffering from those who are at less of a risk is important (Friedman &Brownell, 1995). In addition, research focusing on why some people experience success and maintain initial losses after treatment and why others experience relapses is needed. Because many persons regain weight after seeking treatment, assessing the risk factors that could contribute to weight regain could be beneficial. The potential benefits of this research might be to learn who may benefit from treatment, help to tailor treatment to individual clients, identify what treatment options may be healthier, and determine how to make treatments more effective for longer periods of time in the future.

Risk Factors

Changes in the prevalence rates of overweight/obesity are occurring across gender and age, indicating that there may be groups of people who are at increasingly greater risk for weight gain (Flegal & Troiano, 2000). It has been speculated that gender, the degree of obesity, dieting, cognitive differences, body image, age of onset, teasing, and binge eating are all potential risk factors that may contribute to psychological suffering (Friedman & Brownell, 1995). While it is understood that some overweight and obese persons experience depression (Ross, 1994), body image

problems (Cash et al., 1986), and other psychological difficulties (Berman et al., 1989), the nature of these relationships is not clear. A better understanding of risk factors might illuminate the relationship between overweight/obesity and psychological suffering. Next, the potential risk factors that have been identified will be discussed in more detail (Friedman & Brownell, 1995; Brownell & Wadden, 1992).

Gender Differences. Women seek treatment for their weight more often than men do (Goldstein, Goldsmith, Anger & Leon, 1996). This finding is interesting given that women and men have similar prevalence rates for obesity (Flegal et al., 1998). The fact that women seek treatment more often than men, however, does not necessarily indicate that women are at greater risk for developing psychological distress related to obesity. Women may just be more likely than men to seek external support for weight-related issues. Women over the age of 50 have experienced a drastic increase in obesity in several states (Zablotsky & Mack, 2004). Women also have higher rates of obesity than men as age increases (Flegal et al.). These findings might be related to gender differences in body fat, but could also be related to factors such as exercise and diet.

Some researchers have identified differences in how weight may impact men and women, suggesting that women may experience their weight differently than men. Women with type 2 diabetes have been shown to display higher levels of distress related to their feelings about eating than men with type 2 diabetes (Herpetz et al., 2000). Again, this might be reflective of differences in how health problems impact self-perceptions. In a study conducted by Hutzler et al. (1981), morbidly

obese individuals were given a questionnaire regarding their adaptability and the MMPI. They also were interviewed by a psychiatric consultant. The results of this study revealed that morbidly obese males were perceived as intimidating by the evaluators and as more outgoing than morbidly obese females, while morbidly obese females were characterized as passive and dependent. These findings highlight some of the possible differences in how males and females may express their distress. Crisp, Queenan, Sittampaln, and Harris (1980) suggested that overweight men may be at less risk for depression than overweight women. As mentioned previously, this study involvedhe 'Jolly Fat' hypothesis suggesting that men may experience less depression with increasing BMI scores. In a later study, Carpenter et al. (2000) found that an increase in BMI predicted past suicidal ideation in women, but reduced suicidal ideation in men. Further, although obesity was associated with greater risk of depression in women, the opposite effect was found in men (Carpenter et al.). From this study, it seems that men may not experience the same effects from an increase in BMI as women. These differences could be related to societal pressure for males to increase their body size as a sign of greater masculinity and might suggest that males are more likely to lose weight if they become depressed. These interpretations are largely speculative at this point and must be examined empirically. Clearly, the social stigmatization that is attached to being obese (Friedman & Brownell, 1995; Stunkard & Wadden, 1992) may be impacting males and females differently.

The Degree of Obesity. In addition to gender, the degree of overweight and/or obesity that an individual experiences could impact his or her psychological functioning. Friedman and Brownell (1995) identified the degree of obesity that an

individual experiences as a potential risk factor for psychological distress. Several authors have suggested that the morbidly obese may be more distressed than those who are overweight and/or obese. Aronne (2001) reported that there is a higher occurrence of psychological co-morbidities such as schizophrenia that increase as BMI increases. In an effort to assess psychological and cognitive factors in persons seeking surgery for their obesity, Chelune et al. (1986) conducted a study of 44 individuals to assess potential risk factors for surgery outcomes. The patients in that study were given the MMPI, along with several other psychological and cognitive measures. These authors reported that more than half of their sample elevated at least one clinical scale from the MMPI, "with half of these having a primary or secondary elevation on the Pd (Psychopathic-deviate) scale(p.707)." Hutzler et al. (1981) conducted a similar study on 135 individuals presenting for obesity surgery. The results indicated that 60% of their sample elevated one scale from the MMPI. The mean profiles for the men and women in this sample suggested a primary elevation of the Pd scale. Even though these findings suggest higher psychopathology in these samples, the MMPI was intended for psychiatric populations, and, thus, these finding should be interpreted with caution.

Interestingly, Black et al. (1992) found that family members of morbidly obese surgery candidates were more likely to experience depression, bi-polar disorder, and antisocial personality disorder than a comparison group made up of individuals who did not meet the criteria for a major mental disorder using the DSM-III. Perhaps, a familial history of psychological distress can lead to factors that cause an individual to consume more calories than are needed. Likewise, individuals from

these families may also be predisposed to deficits in coping with stress from their environments.

Despite research suggesting that morbidly obese individuals may experience psychological distress related to their weight , the nature of the relationship between BMI and psychological distress among the overweight and/or obese is less clear. As already noted, this lack of clarity regarding the relationship of weight to psychological distress at the less severe end of the weight continuum may stem from the practice in earlier studies of treating the overweight and obese as a single, homogeneous group. It remains unclear as to what differences might exist between overweight, obese, and morbidly obese individuals on various psychological dimensions. Clearly, the nature of the relationship between BMI and psychological distress needs to be examined further.

Dietary Restraint and Dieting Approaches. Two additional suspected factors in the risk for psychological distress among the overweight and/or obese are dieting and dietary restraint. For many years diets have been promoted to help people lose weight. Some diets have encouraged extremely low caloric consumption in order to promote weight loss. Recent research has indicated that dieting and dietary restraint may be associated with psychological suffering and, therefore, may not be the best approach to treatment. As mentioned previously, dieting has been linked to depression in some studies (Ross, 1994). Cogan and Ernsberger (1999) stated that dieting may have psychological consequences and cause a preoccupation with food. Foster and McGuckin (2002) reviewed the literature on dieting and concluded that non-dieting approaches to treating overweight and obesity may improve

psychological functioning by improving self-esteem and body image. Foster and McGuckin (2002) reported that non-dieting approaches seek to:

> (1) increase awareness of dieting's ill effects; (2) educate patients about the biological basis of body weight; (3) use internal cues such as hunger and fullness, rather than external cues such as calories and fat grams to guide eating behavior; (4) improve self-esteem and body image through self acceptance rather than through weight loss; and (5) increase physical activity. (p.496).

This approach focuses on changing the views of the individual about their weight and their approach to food. Lowe, Foster, Kerzhnerman, Swain, and Wadden (2001) conducted a study of 42 females in order to further evaluate restrictive dieting and non-dieting approaches. The restrictive dieting group followed a low calorie diet and received weight loss interventions while the non-dieting group was taught to respond to internal cues for hunger and received assistance with body image concerns. The authors reported that those in the restrictive dieting group experienced increases on measures of dietary restraint while those in the non-dieting group experienced decreased scores on measures of restraint. These findings suggest that the approach used to deal with weight related issues can impact and change how one responds to food. In the case of restrictive dieters this could result in increased counter-regulatory eating (Lowe et al., 2001).

Another important focus of research has been weight fluctuation. This body of research suggests that weight fluctuation is a common occurrence for many people who battle weight problems that seem to stem from societal pressure to be thin

(Foreyt et al., 1995). Foreyt et al. (1995) conducted a study of normal weight and obese volunteers. These authors were interested in studying the impacts of weight fluctuation on several psychological variables (i.e., weight cycling, well-being, depression, self-control regarding food, and life events). They found that the non-fluctuators were found to have a higher sense of well-being and higher self-efficacy related to self-control around food. Fluctuatorsreport ed more urges than non-fluctuators to overeat when experiencing negative emotions (Foreyt et al.). These findings suggest that maintaining weight could be a protective psychological factor for a person, while beingunable to maintain weight could represent some sort of failure for the individual (Foreyt et al.). Further, it is possible that eating while experiencing negative emotions could represent a difference in coping styles between weight fluctuators and non-fluctuators. No relationship between depression and weight fluctuation was found. Simkin-Silverman, Wing, Plantinga, Matthews and Kuller (1998) examined 429 normal weight and overweight women on measures of weight cycling, depression, stress, tension, trait anger, and anxiety. These authors found no psychologically adverse effects related to weight cycling in their sample. The variability in these findings could be related to the differences in what researchers are measuring. Further, the use of samples from the general populations might not reveal the same effects that might exist among individuals who are seeking treatment.

Being honest with overweight and obese individuals about the limits of weight loss treatment could be beneficial (Heffernan, Harper, & McWilliam, 2002). The overweight and obese may be better served with an honest approach that prepares

them for challenges that include not reaching goal weights, not reaching goals as quickly as anticipated, and relapses or weight gain. While initial excitement can occur when one decides to lose weight (Brownell & Wadden, 1992), this can be replaced by feelings of hopelessness if expectations are different than the expected outcomes. In order to deal with these challenges, some researchers have discussed the idea of promoting empathy among health care providers when working with these populations (Brownell & Wadden). Greater empathic understanding by providers may be helpful in working with individuals who may have experienced past unsuccessful attempts at losing weight and/or suffered undue discrimination because of their weight. Sensitivity to these factors may provide a better experience for the individual trying to deal with their weight.

Caution should be exercised with regard to how one discusses the effects of dieting (Brownell & Wadden, 1992). These authors argue that although there can be risks associated with dieting, the public still needs to hear realistic views on the risks associated with not losing weight. Brownell and Wadden recommended changes in how treatment is approached in order to better serve those seeking treatment. An individualized approach that identifies the needs of the individual and assesses the likelihood of success (Brownell & Wadden), along with an assessment of factors that might potentially lead to distress in the individual, is likely to be more beneficial than a one-size-fits-all approach to treatment. This individualized approach appears to be closely linked to the risk factors approach identified by Friedman and Brownell (1995).

Body Image and Cognition. The nature of the relationship between the cognitive processes of dieters and psychological distress is another factor that has been investigated in the literature. How one processes information that they receive about themselves and the world around them can have profound effects on a person's life (Friedman & Brownell). Cognitive theory (Beck, 1995), which aims to restructure the cognitive processes in individuals who are depressed, has been used to help explain cognitive differences in those who are overweight and obese.

In a study aimed at predicting weight regain in women, Byrne, Cooper and Fairburn (2004) found that dichotomous thinking was a good predictor of weight regain. In a sample of normal weight college students, dieters were shown to display different and less adaptive cognitions than non-dieters on a measure of cognitive style (Tiggemann, 2000). In addition to dichotomous thinking, individuals who were dieting also experienced "irrational needs for success and more fear of vulnerability" than non-dieters. Those who had never dieted and past dieters performed similarly on the measure of cognitive style. Bryan and Tiggemann (2001) found that being on a prescribed diet reduced dysfunctional attitudes regarding vulnerability, but that, overall, dieting appeared to have very little impact on dysfunctional attitudes. The authors also noted that research is needed to examine the differences between those making the decision to diet themselves and those who are asked or required to diet (e.g., being required to diet for the purposes of a research study). These authors hypothesized that making the choice to diet might represent more of an emphasis of thought on dieting and lead to diminished cognitive performance whereas being on a prescribed diet might actually result in fewer thoughts regarding being on a diet

(Bryan & Tiggemann, 2001). These authors also noted that the choice or requirement to diet may impact normal weight and overweight individuals differently.

Individuals who are dieting have been shown to display differences in their performances on cognitive tasks when compared to non-dieters. Green, Rogers, Elliman and Gatenby (1994) conducted a study of 45 normal weight female students using measures of motor speed, visual information processing, and memory. Dieters were found to display poorer performance on several tasks. These authors noted that the dieters reported significant restrictions of their caloric intake, and they hypothesized that the stress related to dieting might have impacted the dieters' ability to attend to cognitive tasks. However, not all studies have produced the same results. Bryan and Tiggemann (2001) found that overweight women did not experience significant cognitive deficits while on a prescribed diet.

Cognitive styles and attitudes about weight also appear to relate to feelings about body size and shape. Severely obese individuals often have poorer body images (Stunkard and Wadden, 1992). Overweight women have been found to be more dissatisfied with their appearance than normal weight and underweight women (Cash & Green, 1986). Cash and Green also found that overweight individuals' estimations of body size were not significantly different than those of normal weight and underweight individuals. Cash et al. (1986) found that those who perceived themselves as being overweight reported less satisfaction with their appearance than those perceiving their weight to be normal. This finding suggests that the perception of being overweight and/or obese may affect feelings about body shape and body size. Further, some evidence suggests that individuals still report body image

concerns even after losing weight (Ramirez & Rosen, 2001) and may retain inaccurate perceptions of their body size despite losing weight (Brownell & Wadden, 1992). The persistence of body image concerns despite weight loss suggests that body image concerns could be related to distortions in cognition, since losing weight alone does not improve body image concerns. If individuals do experience distortions in cognition related to body image, it is unclear whether the emergence of these distortions coincide with the initial weight gain or if they existed prior to the onset of overweight or obesity. One study of women with diagnosed eating disorders revealed that there were differences in how self esteem was established and maintained in these individuals as compared to those individuals without eating disorders (Mendelson, McLaren, Gauvin & Steiger, 2002). An externally derived concept of self esteem seemed to characterize the eating disordered women in this study. These results appear to possibly link those with eating disorders to previous research suggesting that individuals who are dieting may attend more to external cues in cognitive tasks (Etou et al., 1989) and in relation to food (Oakes and Slotterback, 2001).

Tackling the issue of improved body image has been examined more recently (Ramirez & Rosen, 2001). Researchers have begun to examine whether body image therapy in conjunction with a weight loss program leads to better body image outcomes. If body image therapy does lead to better body images, then body image therapy might be a preventative factor in the relapse that is frequently associated with weight loss. Ramirez and Rosen conducted study of 65 men and women randomly assigned to either a weight loss intervention group or a weight loss intervention plus

body image therapy group. The results revealed no differences in body image at the post-treatment phase of the study between the two groups (Ramirez & Rosen). Nauta, Hospers, and Jansen (2001) examined obese and overweight women randomly assigned to either cognitive treatment to address cognitions related to weight and body size or behavioral treatment to address eating patterns. These participants were also divided evenly between the groups based on the status of being a binger or non-binger. The results revealed that there were few differences between the bingers and non-bingers after a one-year follow up. However, at the one-year follow-up, depression scores for the cognitive group were lower than those in the behavioral group. These findings do not seem to support the effectiveness of body image therapy as defined in these studies. However, given the apparent important role of body image in self-perception, further study of this phenomenon seems warranted.

Another factor that may impact body image is the age at which an individual becomes overweight or obese. In a sample of 40 obese females, those who were obese at an earlier age were less happy with their body appearance (Grilo, Wilfley, Brownell, & Rodin, 1994). These individuals also reported being teased more often while growing up. These findings might indicate a further link between body image concerns and cognition, especially for those who are overweight at an earlier age. Perhaps the experience of being teased contributes more to an externally derived sense of self-esteem as well as to less adaptive cognitions about one's weight and body.

Age of Onset. The age at which one becomes overweight or obese may also be a risk factor for future weight problems and psychological distress. A cause for

concern in our society is the increasing number of children who are obese and the increased risk for those children of experiencing adult obesity (Laessle, Uhl, & Lindel, 2001). Obese children are likely to face social stigmatization as a result of their obesity (Stunkard & Wadden, 1992). Adults who were obese as children may have poorer body images than those with adult onset obesity (Stunkard & Wadden). This might be related to the stigma overweight and/or obese children experience and the ease with which messages can be internalized at younger ages. Stradmijer, Bosch, Koops, and Seidell (2000) found overweight adolescents to have more behavior problems perceived by teachers and parents among a sample of 143 overweight and normal weight children. These problems are likely to be small, however (Stradmijer et al., 2000). These authors noted that this finding is hard to explain in terms of an at-risk profile because the situations in which these behaviors are likely to be expressed are unknown. It remains unclear why overweight children may exhibit more behavioral problems than other children. Perhaps the experience of being teased or stigmatized for their weight has an effect on their interactions with both peers and adults.

The role of the parents in a child's life can have a significant impact on the likelihood of a child experiencing weight problems. Parents have a substantial role in the types of foods that their children learn to like and eat (Benton, 2004). Since parents are responsible for the nutrition their children receive, children may develop poor eating habits as a result of the foods to which they are exposed. Another concern is how parental obesity may affect the psychological functioning of children (Epstein, Klein, and Wisniewski, 1994). If parents experience psychological

suffering related to their weight, this could have an effect on how they interact with their children. Epstein et al. (1994) looked at how parental psychiatric problems influenced the psychological issues in their obese children and found that parental obesity and psychiatric symptoms were more closely linked to obese children's psychological problems than sex, age, and BMI. If children are influenced by parental obesity and parental psychiatric problems, then research aimed at looking at psychological variables of parental obesity is important.

Teasing. Many children tease one another while growing up, and some researchers have begun to look at the impact that teasing may have on psychological well-being. Very little is known about the effects of teasing on overweight and/or obese individuals (Grilo et al., 1994). However, it is believed that teasing may be damaging to one's self concept (Friedman & Brownell, 1995). Adults who were teased about their weight as children may be at risk for body image disturbances (Cash et al., 1986). The teasing experienced as a child may cause one to focus even more on outside appearances. If these messages become internalized, one may find it difficult to accept their own appearance. In addition, the frequency of being teased as a child has been shown to be related to obese females' future perceptions of their bodies (Grilo et al.). These authors suggested that weight-related teasing be studied further to determine if there is a relationship between teasing and body image. Furman and Thompson (2002) conducted a study with undergraduate females to see if there was a relationship between change in mood after reading a script about teasing and factors such as being teased, eating patterns, and body satisfaction. These authors expected persons who were previously teased to experience a change in mood

as a result of reading a script about someone being teased about their appearance. These authors did not find that teasing related very highly to how undergraduate females reacted to positive and negative scripts that were presented to them. The authors hypothesized that these results could have been due to high numbers of individuals in their sample reporting little or no experience with teasing. However, others have found that when taken on an individual basis, teasing may have a significant impact on future outlook and attitudes regarding appearance and acceptance of self (Cash et al.).

Binge Eating. Another potential risk factor for psychological suffering among the overweight and/or obese is binge eating. Overweight or obese individuals may meet the criteria for Bulimia Nervosa, Non Purging Type (DSM-IV-TR, 2000). This is characterized by: (a) regular episodes of eating abnormal amounts of food in short periods of time in which the individual feels a loss of control during this time, (b) regular efforts to prevent weight gain such as dieting or excessively exercising that does not involve the act of purging, (c) the behavior occurs at least two times per week for 3 months, (d) the person's body shape and current weight have a significant impact on how the person views themselves, and (e) this does not occur as part of an Anorexia Nervosa episode (DSM-IV-TR, 2000). The prevalence of binge eating among those seeking treatment for obesity has been estimated to be around 30% (Spitzer et al., 1992). The prevalence rate of binge eating disorder in a general population sample of White and Black individuals was found to be 1.5% (Smith et al., 1998), while the prevalence among the overweight in that sample was approximately doubled. A comparison study between an obese treatment group, a non-treatment

obese group, and a normal weight group revealed that the obese treatment group engaged in binge eating more than the normal weight and non-treatment groups (Fitzgibbon et al., 1993).

Research focusing on binge eating suggests thathigher levels of mental distress exist among those who binge eat (Kaplan & Ciliska, 1999). Wadden, Foster, Letizia and Wilk (1993) conducted a study on the psychological characteristics of obese binge eaters at the University of Pennsylvania Obesity Research Group. Participants were given the Beck Depression Inventory (BDI) and the MMPI. Scores on the BDI and MMPI revealed that binge eaters reported greater dysphoria than the non-bingers. Binge eaters scored significantly higher on six of the ten clinical scales on the MMPI. Higher levels of psychopathology have also been found in overweight individuals with type 2 diabetes who also had eating disorders (Herpetz et al., 2000). Lower levels of self-esteem and greater dysphoria were associated with binge eaters in a sample of obese men and women (Striegel-Moore, Wilson, Wilfley, Elder & Brownell, 1998). Bulik, Sullivan and Kendler (2002) conducted a study of morbidly obese women with and without binge eating disorder. The results revealed that binge eating was linked to higher lifetime rates of depression as well as several other psychological disturbances. In another study involving 50 bingers and non-bingers, bingers had lifetime prevalence rates of depression that were significantly higher than the non-bingers (Marcus et al., 1990). Geliebter, Hassid and Hashim (2000) found higher scores for depression among a sample of 85 binge eaters as compared to non-bingers. This trend was also seen as the BMI increased in this sample and might suggest a link between binge eating, the degree of obesity that one experiences, and

the level of distress experienced. However, another study that compared persons with binge eating disorder across a wider range of weights on several psychological measures revealed that weight was unrelated to overall distress (Didie & Fitzgibbon, 2005). Regardless of weight status, this clinical sample did appear to experience significant levels of distress. These findings suggest some commonalities among binge eaters that may transcend weight. Binge eaters in general may exhibit similar feelings about themselves with regard to their appearance or, alternatively, maybe binge eating represents a coping mechanism that individuals have in common. Therefore, binge eating might represent a risk factor by itself, regardless of weight.

Clearly, with the high prevalence rates of binge eating in the treatment population, better assessment is needed to identify those who binge eat. As mentioned previously, these individuals are more likely to be experiencing significantly more psychological distress than obese non-bingers. Further, binge eating may represent a risk factor for psychological suffering regardless of weight status (Didie and Fitzgibbon, 2005). It remains unclear as to exactly how binge eating should be approached in the context of weight loss treatment. More research is needed to determine how best to treat obese binge eaters (Brownell & Wadden, 1992), as it is uncertain whether treatment should begin with addressing symptoms of binge eating or excess weight.

Summary of Risk Factors

When the potential risk factors for overweight and obesity are identified together, it is easy to see that there may be substantial overlap among risk factors. Teasing, age of onset, and body image appear to be related in that the experience of

being teased at as a child can disrupt how one views his or her outward appearance. This can happen in both males and females. Although the reported frequency of teasing may not be very high among those who have been teased, as many as half may report dissatisfaction with their bodies (Cash et al., 1986). Further, females are more likely to report this type of dissatisfaction with their bodies. The degree of overweight or obesity of an individual appears to have an impact on psychological functioning, with the morbidly obese potentially having the highest risk for psychological suffering. However, as noted above, weight may be unrelated to the psychological distress in those persons who binge eat. An individual's perception of his or her outer self can also be impacted by dieting and dietary restraint. Dieters may be more likely to develop dysfunctional cognitions than non-dieters (Tiggemann, 2000). Binge eating also represents a significant risk to those seeking treatment, and further research is needed to clarify how binge eating may relate to the other factors mentioned.

Thus, a single approach to treating overweight and obesity appears to be insufficient, and greater attention is needed when assessing who might be suffering psychologically (Brownell & Wadden, 1992). If risk factors that contribute to psychological distress among the overweight and obese are discovered, an assessment of the interactions of risk factors for the individual seems relevant (Friedman & Brownell, 1995; Brownell & Wadden, 1992). Clearly, a person's weight status is not their only identity as a person, and other explanations for changes in a person's mood and attitudes about appearances are possible. Individuals have interactions everyday with others, and these interactions do not all revolve around weight-related issues.

Familial discord, job difficulties, or problems in school are just a few of the many alternative explanations that could explain why someone is experiencing distress. Therefore, caution should be exercised to avoid the inherent assumption that someone who is distressed and happens to be overweight feels this way because of their weight.

Treatments

Currently, much of the research in the area of overweight and obesity is focused on how to treat these issues. Usually treatment is focused on how to best help someone lose undesired weight. However, research on the long term effects of treatments suggest that there is a fairly high relapse rate and that not all individuals lose weight as a result of treatment. In order to help the prevalence rates for overweight and obesity begin to taper off, treatments that are effective in the long term and that are effective for a wider range of individuals are needed.

Today's culture promotes fad diets that are supposed to help one lose weight and body fat. Many people try to diet on their own by following their own formulas for losing weight or through advice or tips they have received from friends. Individuals may pay to participate in plans marketed by companies who specialize in weight loss programs. For some individuals, just making the decision to change one's appearance can be psychologically healthy (Brownell& Wadden, 1992).

In general, treatments for obesity have been shown to be effective in facilitating weight loss in the short term but fall short with regard to participants' ability to maintain lost weight (Hutzler et al., 1981; Perri et al., 2001). Much of the research looking at effective treatments for obesity has focused on behavioral

interventions (Perri et al.). Behavioral interventions are focused on eating patterns and changing those patterns. The discussion on patterns usually begins by walking people through the events prior to, during, and after eating (Foreyt et al., 1981). Behavioral interventions can produce weight reductions, but the end of treatment often signals the neglect of diet and exercise (Perri et al.). This result might be due to the lack of support or reinforcement of the treatment regimen after treatment ends.

A new trend in the area of obesity treatment emphasizes factors that may help a person lose weight and also maintain that loss (Poston et al., 1999). In a study of 102 obese patients aimed at predicting who might relapse after an 8-week treatment program consisting of a low calorie diet and cognitive treatment with a 3-month and 12-month follow up, Poston et al. found that weight gain in the first 3-months predicted future gains as well. However, the personality measure used in this study was not able to predict those who relapsed or did not relapse at a 3-month and 12-month follow up. The authors noted personality measures may not be very useful in predicting relapse after weight loss treatment. In another study, Perri et al. (2001) found that overweight women receiving extended problem solving training in addition to behavioral therapy maintained losses better than those receiving only behavioral treatment or behavioral treatment with relapse prevention training. These authors suggested that therapist-led interactions may be more useful than more psychoeducationally-oriented approaches.

Pharmacotherapy is another treatment option for obesity. For persons taking conventional or atypical antipsychotics, weight loss drugs are not typically recommended (Aronne, 2001). Potential side effects and current co-morbidities can

limit who is prescribed these drugs (NIH, 1998). The contraindications for these drugs are such that a large percentage of people may not be suitable for this form of treatment. Another difficulty with pharmacotherapy is that it may promote the idea that pills are a cure-all and that weight is out of one's immediate control.

Yet another option for the treatment of obesity is surgery. Surgery is only recommended for those with BMI scores above 40 kg/m^2 or in those persons with BMI scores greater than or equal to 35 if they also are suffering from co-morbidities (NIH, 1998). However, the lack of uniformity in reporting post-surgery outcomes has been a concern in the literature (MacLean et al., 1990). These authors suggested that documenting the unsuccessful cases along with the successful cases is essential in this line of research. Reporting the unsuccessful cases allows others to identify potential patients who might not respond well to surgery in the future. In addition they also suggested that more follow up work be done with patients to assess the success of surgery. These types of improvements can be critical in evaluating the use of surgery for weight loss.

At this point one may ask: Why are treatments for overweight and obesity relatively ineffective over the long term? A logical answer to this would be failure to maintain the structure, habits, or attention that was a part of the initial loss in the first place (Foreyt et al., 1981). However, little has been done to explore the psychological connections to this phenomenon (Byrne et al., 2004). Efforts to establish why some maintain their losses over time and why others do not have been met with mixed results. In a review of the literature on this topic, Byrne (2002) identified several psychological factors that may hold promise for better

understanding weight loss maintenance. These factors included weight goals, coping strategies and problem solving skills, self-efficacy, vigilance, effort versus benefits, binge eating, dietary restraint, disinhibition, and hunger. While treatments appear effective for some in the short term, many persons do not experience success in treatment, and many more experience relapse to baseline weights after treatment. While several treatment options are available, some have promoted exploring treatment options on a case-by-case basis given the heterogeneity of etiology and contributing factors (Brownell & Wadden, 1992).

Summary

As stated previously, the prevalence rates of overweight and obesity continue to rise, and that trend is expected to continue in the future. The physical, social, and psychological consequences associated with obesity are great in terms of both the cost to the individual and to society at large. Surprisingly, relatively little is known regarding the relationship between overweight and/or obesity and psychological functioning. While not all persons who are overweight or obese suffer psychologically, some do to varying degrees. It is clear that this is a highly heterogeneous population, with potential subgroups that share common psychological characteristics. Men and women have been shown in several studies to experience their weight differently from a psychological standpoint. Also, those persons seeking treatment appear to be somewhat different from those in the general population who are not seeking treatment. Factors such as gender, the degree of obesity, dieting and dietary restraint, body image and cognitions, age of onset, teasing, and binge eating might all play a role in the experience of psychological distress. These factors might

also occur together in differing combinations creating complex subgroups. However, it remains unclear whether or how these risk factors may contribute to psychological suffering. If risk factors can be better understood, it might be possible to predict who is likely to seek treatment for their weight, who might have a greater chance of success or failure in treatment, and who may be more likely to relapse after treatment. This kind of understanding holds the great potential for allowing treatments to be tailored to the unique needs of individuals seeking help. Given the potentially serious implications of overweight and obesity for individuals, the rising costs of healthcare, and the high rates of relapse within this population following treatment, there is some urgency for pursuing a greater understanding of the psychological impact of these problems. The specific question to be addressed in this study is:

> Can meaningful subgroups of overweight and obese persons be identified based on their scores on a select group of psychological and demographic dimensions? Specifically, these dimensions will include three scales of the Eating Disorder Inventory-3 (EDI-3), the nine scales of the Brief Symptom Inventory (BSI), the Questionnaire of Eating Disorders Diagnoses (Q-EDD), and the two scales of the Appearance Schemas Inventory-Revised (ASI-R).

CHAPTER THREE

Participants

The research participants will consist of 300 males and females who are participating in a treatment group for weight loss called Taking Off Pounds Sensibly (TOPS). Participants will be recruited from four Midwestern states and will range in age from 18 to 64 years. Informed consent will be obtained and participation in the study will be strictly voluntary.

Instruments

Demographic Questionnaire. Demographics items from the Questionnaire of Eating Disorders Diagnoses (Q-EDD; Mintz, O'Halloran, Mulholland, & Schneider, 1997) will be utilized to collect information from each participant including gender, age, education level attained, race, current weight, height, body frame and perceived ideal body weight. Some questions will be added to address additional background information such as SES, history of being teased about weight, etc.

Eating Disorder Inventory-3. The Eating Disorder Inventory -3 (EDI-3; Garner, 2004) will be used to assess psychological and behavioral symptoms reported by participants. The EDI-3 is a 91 item, self-report instrument containing twelve scales and six composites. Three of the scales, including Bulimia are described as risk scales for developing eating disorders while the other nine scales are described as psychological scales that also are relevant to eating disorders. Items are presented on a 6-point scale. Only three scales will be used in this study and have been described as follows: "(1) Low Self-Esteem (LSE) – 'measures the basic concept of negative self-evaluation…targeting affect laden constructs related to feelings of insecurity,

inadequacy, ineffectiveness, and lack of personal worth.', (2) Bulimia (B) – 'the tendency to think about, and to engage in, bouts of uncontrollable overeating', (3) Interpersonal Insecurity (II) – 'consists of seven items assessing discomfort, apprehension, and reticence in social situations. It focuses particularly on difficulties expressing personal thoughts and feelings with others'" (pp. 14-15).

Cronbach's coefficient alphas for the three scales were: LSE (.89 on a sample of adults from the U.S.), B (.88 on a sample of individuals with Bulimia Nervosa), and II (.84 on a sample of adults from the U.S.) (Garner, 2004). Internal consistencies will also be computed for the current sample. Test-Retest reliabilities for the three scales on a sample of 34 females with a history of eating disorder treatment were as follows: LSE (.95), B (.94), II (.94). An exploratory factor analysis conducted on the Risk Scale items revealed a three factor model. An exploratory factor analysis conducted on the Psychological Scale items revealed an eight factor model. The EDI-3 correlations with their respective scales from the EDI-2 were as follows: LSE (.95), B (.73), II (.85), suggesting that the EDI-3 is consistent with the EDI-2 in assessing similar constructs. The EDI-3 correlations with the Bulimia Test-Revised (BULIT-R) were as follows: LSE (.57), B (.81), II (.27) (Garner, 2004). Convergent and discriminant validity is also suggested in correlations between the EDI-3 and the Dutch version of the SCL-90.

The Brief Symptom Inventory. The Brief Symptom Inventory (BSI; Derogatis, 1993) is a 53-item, self-report measure generating scores on 9 primary symptom dimensions (Somatization (SOM), Obsessive-Compulsive (O-C), Interpersonal Sensitivity (I-S), Depression (DEP), Anxiety (ANX), Hostility (HOS), Phobic

Anxiety (PHOB), Paranoid Ideation (PAR), and Psychoticism (PSY)). The BSI also has three global indices (Global Severity Index (GSI), Positive Symptom Index (PST), and Positive Symptom Distress Index (PSDI)). The BSI requires that the participants rate each item as it applies to them on a 5-point scale ranging from *not at all* to *extremely*.

Cronbach's alphas for a sample of 719 psychiatric outpatients on the 9 primary symptom dimensions were as follows: SOM (.80), O-C (.83), I-S (.74), DEP (.85), ANX (.81), HOS (.78), PHOB (.77), PAR (.77), and PSY (.71) (Derogatis, 1993). Internal consistencies will be calculated for the current sample. Test-Retest reliabilities on 60 outpatients who were tested over a two week period were as follows: SOM (.68), I-C (.85), I-S (.85), DEP (.84), ANX (.79), HOS (.81), PHOB (.91), PAR (.79), PSY (.78), GSI (.90), PST (.80), and PSDI (.87). The test-retest reliabilities indicate that multiple administrations of the BSI over time provide consistent results.

Convergent validity was shown through a comparison of the BSI items from the Symptom Checklist 90, the MMPI clinical scales, the Wiggins content scales from the MMPI, and Tryon cluster scores (Derogatis, Rickels, & Rock, 1976). Further, correlations between the SCL-90-R and the BSI in a sample of 565 psychiatric outpatients revealed correlations ranging from .92 to .99 and indicated that both instruments were assessing much the same constructs. Construct validity was illustrated through a principal components analysis that revealed nine factors that accounted for 44% of the variance. Derogatis (1993) reported that the only factor not to be revealed in the principal components analysis was the I-S dimension and noted

that this might have been due to the smaller number of items that made up that dimension.

Questionnaire for Eating Disorders Diagnoses. The Questionnaire for Eating Disorders Diagnoses (Q-EDD; Mintz et al., 1997) consists of items that assess the frequency of self-reported behaviors (e.g., binge eating episodes) and items that distinguish between eating disordered and non-eating disordered individuals. The Q-EDD is scored based on decision rules that place individuals either in an eating disordered or non-eating disordered category. Following this categorization, a further breakdown of the eating disordered group into six diagnostic categories is possible. Two of these categories include the DSM-IV diagnoses for bulimia and anorexia (which can be further broken down into DSM-IV subtypes). Four of these categories relate to the Eating Disorder Not Otherwise Specified category (EDNOS) (subthreshold bulimia, menstruating anorexia, nonbinging bulimia, and binge eating disorder). The non-eating disorder category can be subdivided into either symptomatic (experiencing at least one self-reported symptom, but not meeting the requirement for a DSM-IV diagnosis) or asymptomatic (experiencing no self-reported symptoms). Interscorer agreement of the Q-EDD was 100% when random Q-EDDs were selected and scored. This suggests that the scoring and administration of the instrument can be mastered.

Test-retest reliabilities over a two week period were as follows: .94 for eating disordered and non-eating disordered groups and .85 for eating disordered, symptomatic, and asymptomatic groups. However, over a 1-month to 3-month time period test-retest reliabilities were not as consistent: .64 for eating disordered and

non-eating disordered groups and .54 for eating disordered, symptomatic and asymptomatic groups. Criterion validity was shown through the Q-EDD categories and diagnosis of the interviewer as well as the accuracy with which the participants were placed into diagnostic categories. The authors reported that only three participants out of 136 were classified incorrectly. Convergent validity was shown by significant agreement between the Q-EDD diagnoses and scores on the BULIT-R and the EAT (Mintz et al., 1997). The incremental validity was demonstrated by a comparison of Q-EDD and the BULIT-R and were judged to be about equal in their abilities to categorize the participants into the correct categories.

Appearance Schemas Inventory-Revised. The revised Appearance Schemas Inventory (ASI-R; Cash, 2003; Cash, Melnyk, & Hrabosky, 2004) is a 20-item measure assessing psychological investment in one's appearance. The ASI-R was originally developed to improve upon limitations of the original 14-item ASI. The current 20-item measure was reduced from a 41-item measure that included only 5 of the original ASI items along with 40 new items. The current 20-item version was created following a principal components analysis of the 41-item measure that revealed two factors (Self-Evaluative Salience of Appearance and Motivational Salience of Appearance).

Cronbach's alphas on a sample of 468 college women and 135 college men were as follows: Composite ASI-R (Men = .90, Women = .88), ASI-R Self Evaluative Salience (Men = .84, Women = .82), ASI-R Motivational Salience (Men = .91, Women = .90). Internal consistencies will be calculated for the proposed sample. Convergent validity was demonstrated through Pearson correlations with seven other

instruments. Positive correlations were reported between the composite ASI-R and the two components and several body image measures. Positive correlations were also reported for the composite ASI-R and the Self-Evaluative Salience component and three measures of body image among the men (Cash et al., 2004). For the men, Motivational Salience only correlated with one other measure. Negative correlations were found between the composite ASI-R and the Self-Evaluative Salience component and a measure assessing the effects of body image on well-being among the women, while a negative correlation was found between Self-Evaluative Salience and the same measure assessing the effects of body image on well-being among the men.

Procedures

Participants will be recruited by their TOPS group leaders on a voluntary basis. After a brief description of the study, and after informed consent has been explained, participants will be given the instruments in a counterbalanced order in a large manila envelope. If the investigator is present at the TOPS meeting the participants will complete a demographics sheet and the four instruments, seal the manila envelope, and return the packet to the investigator. If the investigator is not present at the meeting, the manila envelopes containing the consent form and the instruments will be mailed to the leader of the TOPS group. The leader will then hand out the envelopes to those in the group who volunteer to participate. The volunteers will then read an anonymous consent form explaining the study and indicating that by filling out the instruments in the packet, he/she is consenting to participate in the study. Once the instruments are completed, they will be placed

inside the manila envelope, sealed, and mailed back to the investigator. The investigator will pre-label the envelopes and provide postage in this latter situation. To ensure confidentiality, participants will be directed not to write their names on any of the instruments and to place all of the completed instruments in the envelope, and to seal it before returning it.

Data Analysis

The data from this study will be initially analyzed using cluster analysis in an attempt to determine whether meaningful subgroups can be identified on the basis of the psychological measures and select demographics items. If such groups emerge, discriminant analysis will be conducted to identify variables that discriminate among the groups.

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APPENDIX B

INSTITUTIONAL REVIEW BOARD APPROVAL

The University of Oklahoma

OFFICE FOR HUMAN RESEARCH PARTICIPANT PROTECTION

June 24, 2005

Mr. John Linck
2709 Lawrence Bldg. 6
Norman, OK 73019

RE: Exempt from IRB Review
IRB Number: FY2005-402
Title: An Exploratory Study of Potential Subgroups among Overweight and Obese Individuals

Dear Mr. Linck:

The Institutional Review Board considers that this research is exempt in accordance with the Code of Federal Regulations, Title 45, Part 46, Sub-part 101 (b), Category:

2. *Research using cognitive, diagnostic, aptitude, and educational achievement tests, or surveys, interviews, or observations of public behavior, unless human subjects are identifiable, and disclosure of responses could put them at risk of liability, or damage to their reputations or financial standing.*

as revised November 13, 2001. Further review of this study by the IRB is not required unless the protocol changes with regards to the use of human subjects. In that case, the study must be resubmitted immediately to the Board. Please inform the IRB when this research is completed.

If you have any questions related to this research or the IRB, you may telephone the IRB staff at 405.325.8110 or visit our web site out irb@ou.edu.

Cordially,

E. Laurette Taylor, Ph.D.
Chair
Institutional Review Board – Norman Campus (FWA #00003191)

FY2005-402

cc: Prof. Jody Newman, Educational Psychology
Graduate College

660 Parrington Oval, Suite 316, Norman, Oklahoma 73019-3085 PHONE: (405) 325-8110 FAX: (405) 325-2373

APPENDIX C

CONSENT FORM

Consent Form

Informed Consent Form For Research Being Conducted Under The Auspices Of The University Of Oklahoma-Norman Campus

6/7/05

INTRODUCTION: My name is John Linck and I am a graduate student under the direction of Professor Jody Newman, Ph.D. in the Department of Educational Psychology at The University of Oklahoma-Norman Campus. I invite you to participate in a research study being conducted under the auspices of the University of Oklahoma-Norman Campus. The purpose of this study is to learn more about the self-perceptions of those participating in a support group for weight related issues in order to help health providers with providing better support for these individuals.

DESCRIPTION OF THE STUDY AND CONDITIONS OF PARTICIPATION: Your participation will involve completing a number of surveys that should only take about 30-45 minutes to complete. In this packet of instruments, you will be asked a number of questions regarding your attitudes and beliefs about yourself, how you feel you relate to others and how you feel others perceive you. Your involvement in the study is voluntary, and you may choose not to participate or to stop at any time. You must be 18 years or older to participate in this study. You may withdraw from participating in this study at any time without penalty. However, failure to complete all of the instruments in the packet will result in the subject not having the chance to win one of the four gift certificates.

RISKS AND BENEFITS: There are no risks associated with participation in this study other than those that might be encountered in everyday living. The findings from this project will provide information on how to better assist those individuals whom seek support for weight related issues, with no cost to you other than the time it takes for the survey. Benefits from participation in this study include possibly winning one of four $50 gift certificates to the mall. If you choose to participate in this study you will sign up on a sheet of paper provided to you that will be kept separately from your responses to the item in this packet.

CONFIDENTIALITY: The results of the research study may be published, but your name will not be used. In fact, the published results will be presented in summary form only. All information you provide will remain strictly anonymous. Do not write your name anywhere on any of the papers in this packet.

CONTACTS FOR QUESTIONS ABOUT THE STUDY: If you have any questions about this research project, please feel free to call me *at* (405) 818-7768 or send an e-mail to John.F.Linck-1@ou.edu. You may also contact Professor Jody Newman, Ph.D. at 405-325-2871. Questions about your rights as a research participant or concerns about the project should be directed to the Institutional Review Board at The University of Oklahoma-Norman Campus at (405) 325-8110 or irb@ou.edu.

PARTICIPANT ASSURANCE: By returning this questionnaire in the envelope provided, you will be agreeing to participate in the above described project.

Thanks for your consideration!

Sincerely,

John Linck, M.Ed.

APPENDIX D

PERMISSION TO USE THE Q-EDD

College of Education
University of Missouri-Columbia

Department of Educational and Counseling Psychology
16 Hill Hall
Columbia, MO 65211
PHONE (573) 882-7731
FAX (573) 884-5989
(573) 882-4947 (Office)
MintzL@missouri.edu (Internet)

Dear Q-EDD Users:

Thank you for your interest in using the Q-EDD. Attached please find a copy of the Q-EDD and the scoring manual. The scoring manual looks quite daunting at first, but is actually quite simple to use once you understand it. First, the respondent's height and weight are converted to a Body Mass Index (B.M.I), and then this B.M.I is used to determine a weight category. The remainder of the manual involves the assignment of a diagnosis. Diagnoses are arrived upon by following the flow-chart like decision rules specified in the manual. Please note that each number and abbreviation corresponds directly to the DSM-IV criteria (e.g., 307.1B Fear on page two of the manual corresponds to the DSM-IV Anorexia Nervosa criteria 307.1B pertaining to fear of becoming fat, even though underweight).

As detailed in Mintz, O'Halloran, Mulholland, and Schneider (1997, volume 44, pages 63-79), based on scoring manual decision rules, respondents are placed into diagnostic categories. At the most general level are the diagnostic categories of non-eating-disordered and eating-disordered, each of which is comprised of more specific categories. The eating- disorder category is comprised of six specific diagnoses: two reflect the DSM-IV diagnoses of bulimia and anorexia (which can be further broken down to reflect the DSM-IV subtypes) and four reflect the DSM-IV EDNOS descriptions of subthreshold bulimia, menstruating anorexia, nonbinging bulimia, and binge-eating disorder. The non-eating-disordered category is comprised of two other categories: asymptomatic (i.e., no eating disorder symptoms) and symptomatic (i.e., some eating disorder symptoms but no DSM-IV diagnosis). For those classified as symptomatic, a descriptive label can be assigned if desired; however, these labels were considered exploratory in the initial validation studies and hence, little data exists to support their accuracy.

Because of the way that the scoring manual is set up, at the initial scoring the possible diagnoses are: anorexia, menstruating anorexia, bulimia, subthreshold bulimia, exercise bulimic, nonbinging bulimic, chew\spitters, binge-eating disorder, symptomatic, or asymptomatic. Hence, the categories of eating-disordered and non-eating-disordered are not in the manual. Anyone whose responses lead to a label of symptomatic or asymptomatic would be considered non-eating-disordered; anyone whose responses lead to a label of anorexia, bulimia, menstruating anorexia, subthreshold bulimia, nonbinging bulimia, or binge-eating disorder would be considered eating-disordered. These diagnostic categories and sub-categories can be found at the top of the Scoring Manual and can be circled to indicate the respondent's diagnosis after scoring is complete.

As noted in Mintz et al. (1997), psychometric data exists to support the use of the Q-EDD for making the following diagnostic differentiations: (a) between eating-disordered and

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non-eating-disordered; (b) among eating-disordered, symptomatic, and asymptomatic; and (c) between anorexic and bulimic. Only exploratory data has been gathered for differentiating among the six eating disorder groups and for differentiating among symptomatic subtypes. Likewise, while the scoring manual is set up to differentiate anorexic and bulimic subtypes, only a limited amount of psychometric data has been gathered on this distinction. While in our initial validation study "subtype was never missed" (Mintz et al., 1997, p. 72), using the Q-EDD to differentiate subtypes should nevertheless be done cautiously.

An additional word about two of the diagnoses yielded by the scoring manual is in order. Chew/spitters: While chewing food and spitting it out is contained in the DSM-IV as an EDNOS, our interviews indicated that the very few respondents who endorsed only such an item indicated that they spit out food that did not taste good. Hence, if a person answers only yes to this item (i.e., no other eating disorder symptoms), this person would be given the label of chew/spitter by the scoring manual. A conservative approach would be to eliminate these individuals from your study (we had little data on them); on the other hand, a less conservative but clearly justifiable alternative is to place these individuals in the asymptomatic category. Exercise bulimic: These would be individuals who meet all the criteria for bulimia, with the criteria regarding inappropriate compensatory behavior being met by excessive exercise alone. We found they are rare, but do exist; furthermore, in our study, the few we had in the sample were considered to be eating-disordered by our interviewers. Again, since we have little data on these individuals, a conservative approach would be to eliminate these individuals from your study. A less conservative but clearly justifiable approach would be to consider these individuals to be eating-disordered (i.e., restricting-type bulimics).

We hope you find the Q-EDD to be a useful tool in your research or practice. We request that you inform us of the results of any study you conduct using the Q-EDD. Also, if you have any problems with the scoring manual, please let us know so that we can use this information to make any needed revisions.

Finally, if you have questions about the Q-EDD or the scoring manual, please contact Laurie Mintz. If at all possible, please use email for such correspondence (address listed above). Telephone is the next best alternative.

Good luck with whatever project you are using the Q-EDD for.

Sincerely,

Laurie Mintz Sean O'Halloran Amy Mulholland

Laurie Mintz, Ph.D. Sean O'Halloran, Ph.D. Amy Mulholland, M.A.

APPENDIX E
PERMISSION TO USE THE EDI-3

PAR
Psychological
Assessment
Resources
INCORPORATED
16204 N. FLORIDA AVENUE
LUTZ, FLORIDA 33549
Tel.: (813) 968-3003
Fax: (813) 968-2598
www.parinc.com

Sent Via Email: jfl30@hotmail.com

August 10, 2005

Mr. John Linck
University of Oklahoma
Counseling Psychology Clinic
2709 Lawrence Avenue
Norman, OK 73072

Dear Mr. Linck:

In response to your recent request, permission is hereby granted to you to reproduce up to a total of 300 copies of the items in the Interpersonal Insecurity, Bulimia, and Low Self-Esteem scales of the EDI-3 for use in yourresearch titled, *Perceptions of self related to attitudes about weight*. If additional copies are needed, it will be necessary to write to PAR for further permission. Permission is also granted for you to reproduce up to a total of 3 sample items from the EDI-3 for use in your dissertation appendix.

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Sincerely,

Molly Johnson
Customer Support Specialist
mjohnson@parinc.com
1-800-331-8378 (p)
1-800-727-9329 (f)

APPENDIX F

DEMOGRAPHICS

Demographics Questionnaire

Please place an (X) or write in the answer that best describes you. The results of this study rely on the assumption that you will respond to each item as accurately as possible. All items are kept confidential, as no identifying information will be reported in the results of this study. If you are not comfortable answering a question in this survey please feel free to not answer that question. PLEASE DO NOT PUT YOUR NAME ANYWHERE ON THIS SURVEY.

1. Marital Status:
___ Married
___ Single
___ Divorced

2 . Household Income (Per Year):

___ Below $10,000	___ 70,001 to 90,000	___ 140,001 to 160,000
___ 10,000 to 30,000	___ 90,001 to 100,000	___ 160,001 to 180,000
___ 30,001 to 50,000	___ 100,001 to 120,000	___ 180,001 to 200,000
___ 50,001 to 70,000	___ 120,001 to 140,000	___ Above 200,000

3. How many times in the past 12 months have you been on a diet?
___ Never
___ Once
___ Twice
___ Three or more times
___ I have been on a diet for the past 12 months

4. Do you consider yourself overweight?
___ Yes
___ No

If yes, how many pounds overweight do you think you are? _____

If yes, please circle on the 7-point scale how distressed you are by your weight:

Not at all 1---2----3---4---5---6---7 Very distressed

5. At what age did you first consider yourself to be overweight? _____

6. How long have you been a member of TOPS? _____

7. At this time how would you rate your overall health?
___ Poor
___ Fair
___ Good
___ Excellent

8. As a child, were you ever teased about your weight?
___Yes
___ No

If yes, how distressing was the teasing you experienced? Please circle how distressing this was for you on the 7-point scale.

Not at all 1---2----3---4---5---6---7 Very distressing

9. <u>Do you currently experience any teasing about your weight?</u>

___ Yes
___ No

If yes, how distressing is this for you? Please circle how distressing this is for you on the 7-point scale.

Not at all 1---2----3---4---5---6---7 Very distressing

10. <u>As a child how often was your weight discussed by your family?</u> _____

11. <u>As a child were you ever discouraged from eating?</u>

___ Yes
___ No

If yes, about how often did this occur? _____

12. <u>As a child were you ever encouraged to eat?</u>

___ Yes
___ No

If yes, about how often did this occur? _____

13. <u>As a child how often were family events/celebrations centered around food?</u>

___ All of the time
___ Often
___ Rarely
___ Never

APPENDIX G

PERMISSION TO USE THE ASI-R

Dear Mr. Lick:

This email confirms that you have obtained permission to use the ASI-R in your research project.

Best wishes on your dissertation.

Sincerely,

Thomas F. Cash, Ph.D.
University Professor
Department of Psychology
Old Dominion University
Norfolk, VA 23529
Phone: (757) 683-4439
Fax: (757) 683-5087
web site: www.body-images.com

APPENDIX H

BSI

The University of Oklahoma

COUNSELING PSYCHOLOGY CLINIC

GSRAP Application Checklist: Please include the following in your application:

✓ ***A copy of this page (includes Graduate Student Research Assistance Program Agreement.)*** ***<u>You must submit this form on institution letterhead</u>*** *as indicated on the first page.*

✓ ***Pearson Assessments Order Form*** *(located near back of catalog)-Use this order form to order discounted test products, and also to order reference materials and other products not discounted under this program. Review the helpful Ordering Information page near the front of the catalog, as well as the attached Pearson Assessments Order Form. Note that the return policy stated in the catalog does not apply to GSRAP participants.*

✓ ***Qualification Form*** *(located in this packet and in the catalog)-All GSRAP applicants need to complete the attached Graduate Student Qualification Form. If you have already established credentials with Pearson Assessments, please complete this form anyway and include your Pearson Assessments customer account number. If you cannot establish your qualifications at the appropriate level for the test you wish to purchase, the catalog copy of the Qualification Form must be completed by your Research Supervisor as well. In other words, you need to file at least one (the Graduate Student Qualification Form) of these forms as a GSRAP applicant. You will need to file two forms (yours and a supervisor's) if your qualification level is not at the appropriate level to allow you to purchase the test(s) you need for your research.*

✓ ***Payment****-Payment arrangements are required at the time of GSRAP application in the form of a Credit Card Number and Expiration Date, a Money Order, Check, or Purchase Order.*

✓ ***Software License agreement*** *(located in catalog)-If you do not currently have a license to use the Q Local™ software, sign this license agreement and we will send you the software and waive the first year's licensing fee. After the first year, if you wish to continue using the Q Local™ software, you will be required to pay the regular annual licensing fee of $89.*

✓ *To use the Q Local™ software, your computer must meet the minimum specifications listed on the* ***Q Local™ Software*** *pages near the front of the catalog.*

Graduate Student Research Assistance Program Agreement

The following statement and indicated signatures must be received and on record at Pearson Assessments:

I certify that I am a graduate student wanting to use Pearson Assessments test(s) for my thesis or dissertation research, for purposes of obtaining a masters or doctoral degree, respectively. I certify that all Q Local™ administrations, pre-paid Mail-In answer sheets, or Hand Scoring materials purchased under the Pearson Assessments Graduate Student Research Assistance Program will be used in the above non-billable research project (thesis or dissertation ONLY). I certify that the use of the test(s) is clearly an appropriate application using procedures as defined in the test manual.

I understand and agree that all purchases of Q Local™ administrations, pre-paid Mail-In answer sheets, or Hand Scoring materials under the Pearson Assessments Graduate Student Research Assistance Program are subject to the contract terms and conditions in the current Pearson Assessments catalog and the Q Local™ software license agreement. I understand that these materials may not be copied or reproduced in any way. I also understand and agree that this discount will be limited to a maximum of three different orders, and that no returns, exchanges, or credits of any kind will be accepted by Pearson Assessments.

In consideration of the granting of this research assistance for Q Local™ administrations, pre-paid Mail-In answer sheets, or Hand Scoring materials, I agree to provide Pearson Assessments with an abstract of the results of my thesis/dissertation research within one month after the report is completed. I authorize Pearson Assessments, on a royalty-free basis, to copy and distribute the abstract of this research project to interested researchers and clinicians. The data resulting from my research will remain the property of the researcher.

John Livek
Student's PRINTED name

Student's SIGNATURE — Date: 5/3/05

Research Supervisor/Graduate Advisor/Committee Member — Date: 5/3/05

Counseling Psychology Program; University of Oklahoma
Full name of Graduate Program and Institution

FG105
01/05

2709 Lawrence Avenue, Norman, Oklahoma 73019-0665 PHONE: (405) 325-2914